University News

MONDAY, DECEMBER 6, 1993 Rs. 5.00

Dr U S Chaudhari, VC, Devi Ahilya Vishwavidyalaya, inaugurating the Workshop on Funding Agencies Seated L to R are Dr. G G Dandapat, Joint Secretary, UGC, Dr S P Gupta Additional Secretary, UGC, Dr A.P Pande Member, MP Uchcha Shiksha Anudan Ayog and Dr M L Kothari, Director of the Workshop.

Prof. Johan Galtung of Norway, who was awarded the Jamnalal Bajaj International Award for promotion of Gandhian Values the world over, receiving the citation from Prof. Ramlal Parikh, VC, Gujarat Vidyapith.

DR. BABASAHIB AMBEDKAR NATIONAL INSTITUTE OF SOCIAL SCIENCES, MHOW (M.P.)

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EMPLOYMENT NOTICE

Applications are invited for the following posts -

PROFESSORS (3) One each in Environmental Studies, Rural Development and Labour Welfare & Personnel Management, Pay scale Rs 4500-7300 **(I) Qualifications : (a) Essential** (i) An eminent scholar with published work of high quality, actively engaged in research/education in the relevant field (ii) At least 10 years experience of research and Post-graduate teaching at a recognised University/Institution, including experience of guiding research at doctoral level of which at least 5 years experience as Reader or equivalent level (iii) An outstanding scholar with established reputation who has made significant contribution to knowledge **(b) Desirable :** (i) Ph D degree in relevant field (ii) 15 years experience of Post graduate teaching and research of which 10 years experience in guiding doctoral research (iii) Significant contribution to innovative research and curriculum development. (iv) Experience of working in backward areas Age below 50 years on 31st October, 1993

READER (4) One each in Environmental Studies, Social Development & Justice, Labour Welfare & Personnel Management and SC/ST & Backward Classes Development, Pay scale Rs 3700-5700 **Qualification · (a) Essential** (i) A good scholar with published work of quality with good academic record, and actively engaged in research/teaching in relevant field (ii) Eight years experience of post graduate teaching/research (including upto a maximum of three years for obtaining research degree) in a recognised University/Institution with at least 3 years successful experience in guiding the post graduate research for doctoral degree **(b) Desirable** (i) Ph D degree in relevant field (ii) Contribution to innovative research and curriculum development Age below 45 years

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ASSISTANT LIBRARIAN/DOCUMENTATION OFFICER (a) Pay scale Rs 2650-4200 **Qualifications : Essential** (i) Second Class B.A./B Sc./B Com degree plus a Masters degree in Library Science Or a Second class M A /M Sc /M Com degree plus a second class Bachelor's degree in Library Science (ii) About five years experience of working in library of repute **Desirable :** (i) Experience in documentation of arrivals in a Library of a recognised Institution Age below 40 years

LIBRARY ASSISTANT Gr I (1) Pay scale Rs 1640-2720 **Qualifications · Essential :** Graduate of a recognised University plus a Bachelor's degree in Library Science **Desirable :** about two years experience of working in a library Age below 35 years

RESEARCH ASSOCIATES (1) Pay scale Rs 1640-2900 **Qualifications : Essential .** At least a second class Master's degree in Social Sciences preferably in Economics, Sociology, Social Work, Psychology or Philosophy **Desirable :** (i) Knowledge of developmental problems of the society (ii) knowledge of research procedures and methodology in social sciences Age below 35 years

CAMERA MAN/PHOTOGRAPHY (1) Pay Scale Rs 1200-2040 **Qualifications : Essential** (i) 10+2 passed plus a certificate/Diploma in Photography (ii) About two years experience of photography in a public or private establishment **Desirable** Knowledge of mechanism of camera and knowledge of photography technology/processing technology of photography films Age below 25 years

LAB-TECHNICIAN(1) Pay scale Rs 1200-2040 **Qualifications : Essential ·** (i) Passed 10+2 plus certificate/Diploma in laboratory technology or graduate in science with chemistry as main subject (ii) About 2 years experience of working in a nutrition/environmental laboratory in analytical work Age below 25 years

FIELD TECHNICIAN (1) Pay scale Rs 1200-2040 **Essential Qualifications** (i) Graduate in humanities or science (ii) Two years experience of field work in collection of data in social science Age below 25 years

CARETAKER-CUM-SECURITY SUPERVISOR (1) Pay scale Rs 1200-2040 **Qualifications** Passed 10+2 plus the candidate must be an identified sportsman/athlete recognised at a region/state level Or Graduate in any branch of education plus an identified sportsman at the institution level Desirable Knowledge of maintenance of buildings and property and security of the assets of the institution Age below 25 years

STUDIO ASSISTANT (1) Pay scale Rs 950-1530, Essential Qualifications (i) Candidates must have passed class tenth from a recognised board/University (ii) Certificate of Diploma in lab-technology Age below 25 years

GENERAL The above scales also carry usual allowances as per norms of M P Govt /Institute. Working knowledge of Hindi is essential Preference shall be given to SC/ST candidates Candidates already in service must apply through proper channel Applications should be sent in proforma stating Names, address, age (with date of birth), qualification, present position held with its duration, pay scale, total experience, whether SC/ST, specialization, Training if any, accompanied by attested copies of testimonials to the ***Director General, Dr. Babasahib Ambedkar National Institute of Social Sciences, 54, Anand Nagar, Chitawad Road, Indore*** latest by 15th Dec 1993 alongwith a D D of Rs 25/- as application fee (non-refundable) in favour of ***Director General, BANI, Indore.*** The SC/ST candidates are exempt from payment of application fee

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Editor :
SUTINDER SINGH

Accountability in Education

R.S. Trivedi*

The Gnanam Committee report, *"Towards New Educational Management"* advocates accountability for university & college teachers, department heads and Vice-Chancellors through performance appraisal. Apparently this idea seems to be radical. But no idea is radical unless it has its functional value.

Everybody has to play a role behoving the status he/she occupies. In fact status is the positional aspect of role and role is the behavioural aspect of the status one holds. However 'Role' is social and based on the interactions. The interactions, intraface and interface, are to be viewed in the context of social change.

In reference to the change perception everyone in the University has, in general, an attitude of 'No change'. In the scale of change we pass through slow down to indifference. We never accept the change and participate. Teachers, as community, vice-chancellors and administrators in their roles, it appears, have never gone beyond 'indifference'. The role of acceptance and cooperation is yet to be seen. This scenario is because of the pressure of pathological aspects of the system itself. We are not functioning as a system. In fact educational management and administration consist of rules, regulations and procedures. The hierarchical approach adopted by the universities in general have adopted mini-bureaucratic administration. The administration has no positive incentive. Lack of motivation plus factors affecting motivation adversely are responsible for 'No change' attitude. The union-role in the system, if we call it a system, adopts the role of resistance to new change. Innovation resistance has become the main trend. In such a context what is the accountability of accountability?

We are in the midst of challenges and crisis. We fail to analyse these changes and crisis. We look upon this change as a threat. We have to bear in mind that new conditions and new knowledge have set us at sixes and sevens; and at sixes and sevens we are doomed to remain until we are able to achieve new synthesis. We do not perceive this synthesis because the system in which we are functioning has given us myopic view. The entire professionalism in education is missing. Vice-Chancellor has yet to prove that he belongs to a profession and has to give a direction to the profession.

Administratively we are under non-innovative milieu. The bureaucratic style of law and order maintenance is still dominating educational management at all levels.

What role do we expect of such a system? In absence of active role, what is accountability?

The questions, therefore, one would like to pose, are :

Does the system of education work?
Do we manage and deliver benefits to the society as a whole?
Do we seek freedom or protection?

**Ex-Vice-Chancellor of Bhavnagar University, and Chairman, Higher Secondary Education Board, Gujarat State, Ahmedabad-380 006.*

In seeking their security teacher community as a whole has mortgaged their freedom.

We have to seek for the new system wherein the management in all its behaviour is management oriented to achieve new attitudes of work, new visions of performance. We have to be first socialized and oriented so that later on our behaviour is institutionalised. At present any innovation introduced and backed by liberal financial assistance by the UGC results in an isolated project instead of characteristics institutionalised of the project. This scenario has to be changed by analysing the infrastructure and removing the change-resisting components.

The accountability has its roots in the responsibility one is entrusted with. In what way the teacher community is given the responsibility of handling educational programmes and procedures? Teachers including those in departments of the university are not free to evolve their own curriculum, their own evaluation procedures. Teachers at every stage have remained as employees in the entire structure. Even the vice-chancellors in the respective pay scale have become mere employees of a larger employment system.

The new self appraisal system hardly goes beyond the ritual. How does it reflect a teacher's functional experience, his involvement or participation in the process of education in general and in the teaching learning continuum? How does the appraisal proforma reflect the developmental aspect of a teacher's professional personality? The self appraisal is to be viewed in the context of a system organisation and also in the context of programme execution. The routinised programme in higher education has itself become a change-resisting factor.

The university roles are statutory instead of creative because of its change-resisting bureaucracy. Various boards of studies and academic councils have been reduced to a replica of hierarchical bureaucracy. This type of affair never gives an opportunity to a teacher to introspect and thus unfold for his self-appraisal.

During the process of introspection a teacher is able to look within, examine his own potential, study his goals, motives and even motivation. In this respect the university administration requires flexibility to unlock the motivation.

Professional code is not to be devised by an outsider. It has to be developed internally by everyone occupied in the educational programme. Vice-Chancellor is not an exception. If the administrative flexibility is feasible, teacher-community will be able to identify their professional credentials. These professionals in their new style of work would help the organisation, the system and the academic behaviour since it would provide the real creative basis to function.

The performance-audit of teachers, teacher unions and institutions is feasible only if the existing bureaucratic framework of the system is totally revamped. The management structure of universities requires reframing. Mere granting autonomy is no solution since autonomy cannot be given. It has to be evolved institutionally.

The basic concepts of autonomy, accountability, decentralization, etc are not perceived in this context. These concepts remain at the dictionary level if the existing system of pattern maintenance continues. It is ridiculous to think of university autonomy till it is interpreted in terms of financial allocation and quantitative expansion.

The entire education has to be viewed in terms of larger social movement. Decentralization does not mean privatisation to profit.

Teacher community is not only to be secured but to be safeguarded professionally.

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A Weekly Chronicle of Higher Education

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Empowerment : The Story of an Exhilarating Experience

D. Raja Ganesan*

Professional education is moving beyond the conventional Case Method to the Story Mode. The Case Method consists of two phases : Case Studies leading to the building up of a Case Bank, and Case Discussion. Despite the apparent concreteness of the case content the thrust of the Case Method is towards abstract generalisation. The actors in the case episodes are invariably shorn of their flesh and blood, and reduced to puppet skeletons. The case discussion focuses, to change the metaphor, on role silhouttes, and blacks out the voice and the face. The actors have no means of preventing misinterpretation of the subjective correlates of the scripts attributed to them. A cunning but ingratiating employee seldom says to the boss, "No, Sir", but often subverts and torpedoes the tasks assigned to him. The story mode is an attempt to recapture these vital, existential dimensions in human interactions.

The contents of a case are but raw data: interpretative exercises on this data are expected to generate flashes of insights in the learner's mind. A story, on the other hand, has already woven the elements into a deep and holistic tapestry to be imprinted effortlessly on the trainee's consciousness.

Themes like transformational leadership and empowerment — the beacon lights in man-management today — call essentially for the cultivation of a particular, complementary forms of consciousness on the part of the boss and the subordinate. Authenticity is the parameter for the relationship between these forms of consciousness. A manipulative, inauthentic boss may mouth a script of empowerment loud and long. But his sharp, steely look and hollow voice will betray the stance of his consciousness — sooner rather than later. The context — of previous experience of the employee himself, the stories about the boss already in circulation, or the unwitting look of pity hastily averted on the part of a well-meaning but hapless fellow employee — too may contradict this script.

The author of this article himself was an actor and the focus of authentic empowerment in a memorable episode some eight years ago. The episode had so strongly registered in his consciousness that it came up instantly when he wanted to illustrate the concept in a seminar on empowerment which he gave last year (1992) in IIM., Ahmedabad. He was, however, at a loss to *analyse* it when he was obliged to do so by the momentum of the post-presentation discussion — because an *existential experience is not susceptible of minute conceptual analysis*. Nevertheless, the experience has taught him vividly and deeply how to empower.

Here is the story:

"Dr. Ganesan, I have a piece of work to be done. Would you do it for me? Your professor suggested you for it."

"Yes, sir, with pleasure. My professor too just told me about it."

"Very good: yes, I am organising the 44th All India Political Science Conference here for three days — December 22-24, this year (1985). As you would have noticed the New Education Policy is the talk of the town. Though it may turn out to be 'old wine in new bottle' I feel we must have a session on the theme in our conference. Of course, from the perspective of political science. What do *you* think?"

"Yes, I too strongly feel we must have a session on that. Most of the delegates being both teachers and political scientists at once, will have something illuminating to say about it. And, if I may say so, there *is* something new in the policy document. At least, an open and authentic admission of failures."

"Is it? Well, you are in the department of education. And you must be knowing better. Perhaps we in other faculties see only the wood and you see the trees — being already *in* the wood" *(laughs heartily)*

That was the beginning of a conversation be-

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tween Professor C. A. Perumal, the President of the said Conference then and now a Professor Emeritus of Political Science, and myself.

The professor then took out a file from his drawer and handed it over to me :

"See, this file contains all the details about the conference. There is also a draft note about the session on New Education Policy. Feel free to modify it as you think best. I have already written to some 'fellows' who I thought would make a good 'show'", said the professor in his imitable colloquial style which makes for instant rapport. He went on:

"You be the chairman of the session. Please keep the 'fellows' I have already invited. And (you) invite your friends and/or colleagues — whoever you think will make a good show. They must be able to bear the travel. I will 'lodge them and feed them'. And take them around to Mahabalipuram etc., for sight-seeing one evening..."

"Sir, I am afraid being just a lecturer — on the first rung of the faculty ladder in the university — senior professors may be reluctant to present their papers if I chair the session..."

"... Then you choose somebody on your own for chairing the session and invite him. Draft the letter and we will send it jointly".

"Sir, Dr. D. J. Reddy, former Vice-Chancellor of S.V. University, readily comes to my mind for the Chairmanship".

"Do you know him? Do you feel you can work with him comfortably and well?"

"Yes, very much"

"Then go ahead. He is also a personal friend of mine. It is an apt choice. But he must be available. Ring up and check with him and confirm it."

"And ... I would like to invite Professor P.G. Altbach of SUNY, Buffalo (USA), to the session. Professor Altbach, I can say, is an authority on Indian Higher Education, and he will be a star speaker."

"Well, I can manage to pay him inland air fare from Bombay to Madras, offer him 'five star' hospitality as a special case, and put him back in the flight to Bombay at Meenambakkam. I shall be only too happy if he could make it. Write to him, If you want, if you think it will be more effective, we can jointly invite him; or whatever you think we can do for getting him down here within our constraints we can explore them".

"And Dr. Ganesan, (you) think of an official designation for yourself vis-a-vis the session... be the Co-chairman".

"No, sir. Thanks. I would prefer a more modest designation — "Coordinator".

"Strange! Why are you afraid of a bigger title? How would you grow then?"

"I am not afraid of a bigger title but would like to remain less visible on home ground for some more time to come".

"Fine, the choice is upto you. And, Dr. Ganesan, we have to bring out a booklet containing the abstracts of the session papers. Put the chairman's name on the front page, you are the editor. However, being the President of the conference I am also supposed to be its editor. So put my name too as editor. If you know any neat and punctual press, entrust it to him. Be sure he will keep to the deadline. Or else, go to the X press. He has been keeping his word and he is also tolerably neat and tidy!"

"I prefer X Press, sir".

"Good Dr. Ganesan. The file is with you. Whatever expenses you incur for the session you are noting them down and certifying that they have been incurred, and I am reimbursing them to you in full. The session is yours now. If bouquets come all the credit goes to you. If, by chance, there are brickbats, I will take them on, bear the responsibility for any mishap. I will announce openly that it was done so under *my* instructions. Take decisions and keep going. You need not consult me or anybody around here in my department — unless *you* want to. All the best."

All along there was a perfect resonance between the face, the voice and the script of the professor. It was colloquial, interspersed with homely proverbs, amusing jokes and unreserved, hearty spontaneous laughter that puts the other instantly at ease. One could instinctively feel that one was relating to a lively human being, not dealing with a role.

It was an exhilarating experience of empowerment the author has had in his life. No wonder he did his best for the session, like he had seldom done before. What is more, he believes he has learnt through this short interaction, the secret of empowerment, of getting the best from everyone — in terms of both motivation and competence.

Medical Informatics Centre at the Tamilnadu Dr. M.G.R. Medical University

N.M. Samuel*
B.P. Rajan**

Background

Thanks to the Indian Council of Medical Research and the National Informatics Center, who have pioneered in the field of biomedical information and to link up with National Library of Medicine in the USA. National Library of Medicine is an international resource with innovative systems of data retrieval and had made significant and unique worldwide contribution to the biomedical information.[1]

Technology has given us a "alternative way of finding information and one must choose the best. Electronic information may be obtained in one of the following ways : Online Service; magnetic media and CD ROM service.[2]

The information is more important than the technology used. It is of relevance that the biomedical information is not just accessed from one country to another but it must be a two way process, in the words of Mr. Zawislik[3], information delivery is like a "two headed coin". This information requires to be reliable, accurate and of high quality.

The Tamilnadu Dr. M.G.R. Medical University is the second medical university in the country. It was established by an Act of State Legislature in 1987. One of the main objectives of this university is the "dissemination of knowledge in the field of medical, health sciences and to develop research facilities".

With this background the Tamilnadu Dr. M.G.R. Medical University had the intention to develop medical informatics center in the medical library of the university. We are aware :

- that the information explosion in health sciences has surpassed even the largest library budget.
- the costs of traditional library services have escalated in the recent past.
- the modern methods involved to acquire and retrieve information are too expensive for one library; therefore "resource sharing" is vital.

Objectives

The project began in December 1992 with the following specific objectives :

- To make the medical community aware, understand and to incorporate the new information technologies into medical education, medical research and medical practice.
- To transform the traditional library which is perceived as a custodian of world's knowledge base to be an active partner in the management of biomedical information.
- To cope with the increasing information explosion, as there is a need to shift from paper to electronic means of managing and storing information.
- To develop a "team" consisting of a traditional librarian, a computer programmer and a medical doctor to interact to retrieve information and to develop local data bases.
- To instil information query habit among the clinicians, teachers and researchers of this university.

Setting the Stage

In December 1992 the university acquired with the assistance from the National Informatics Center, New Delhi, one complete micro earth station with DE-ICER antenna system for installation. A computer with a printer was installed in an air-conditioned room with uninterrupted power supply. MEDLARS — Medical Literature Analysis and Retrieval Systems created by National Library of Medicine, USA is available since 1986 in a computer at National Informatics Center, New Delhi. Through the satellite based computer communication network, the Medical Informatics Center of this University through it's own micro earth station is able to directly retrieve MEDLARS information. A menu driven bibliographic retrieval software, BRS/SEARCH is used to search this data base.

CD ROM also forms part of the Medical Infor-

Professor/HOD, Department of Experimental Medicine/SMI & Officer Incharge of the Library.
***Vice-Chancellor,*
Tamilnadu Dr. M.G.R. Medical University, Madras-7.

Fig - 1 : Number of Documents Retrieved per Month

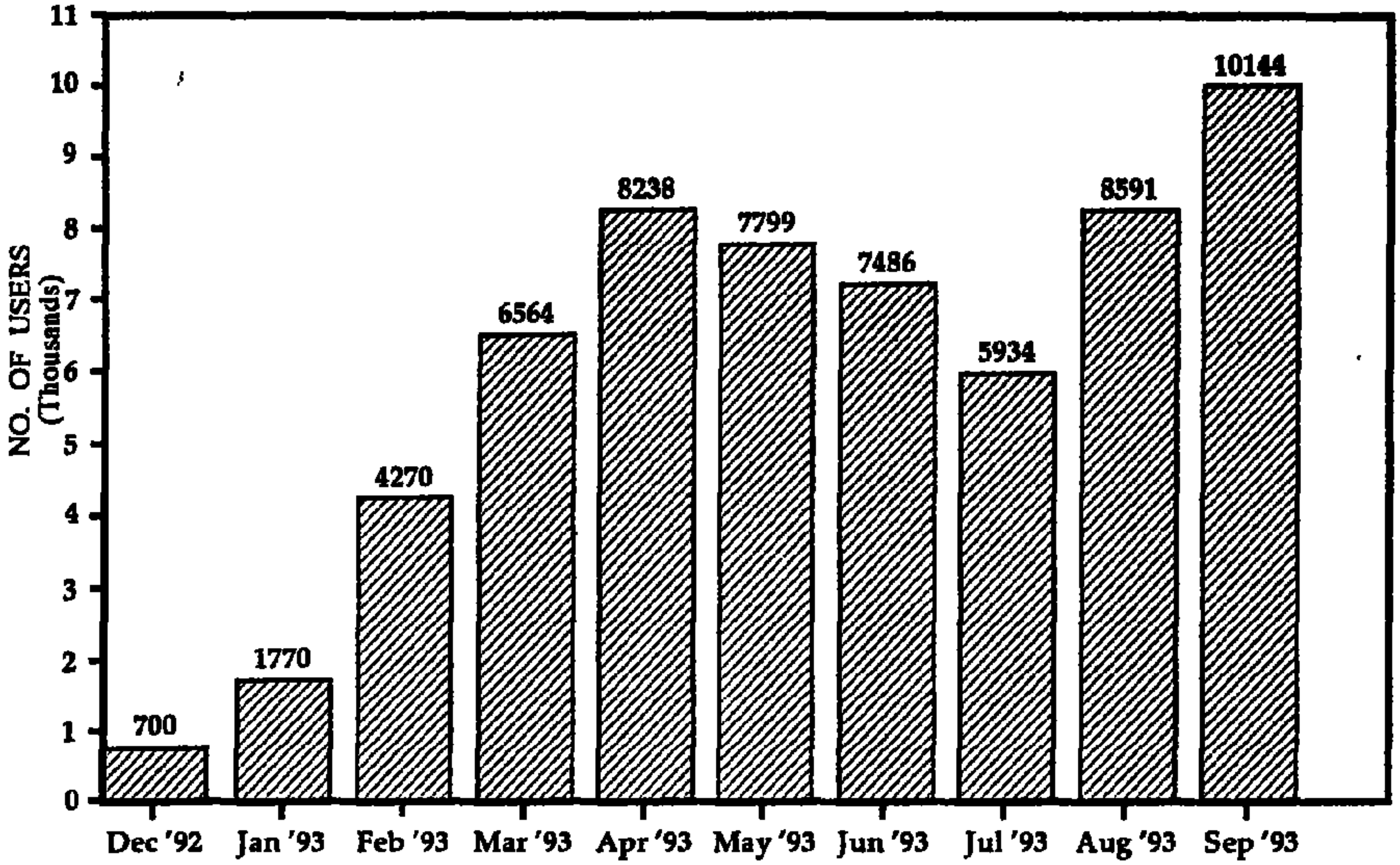
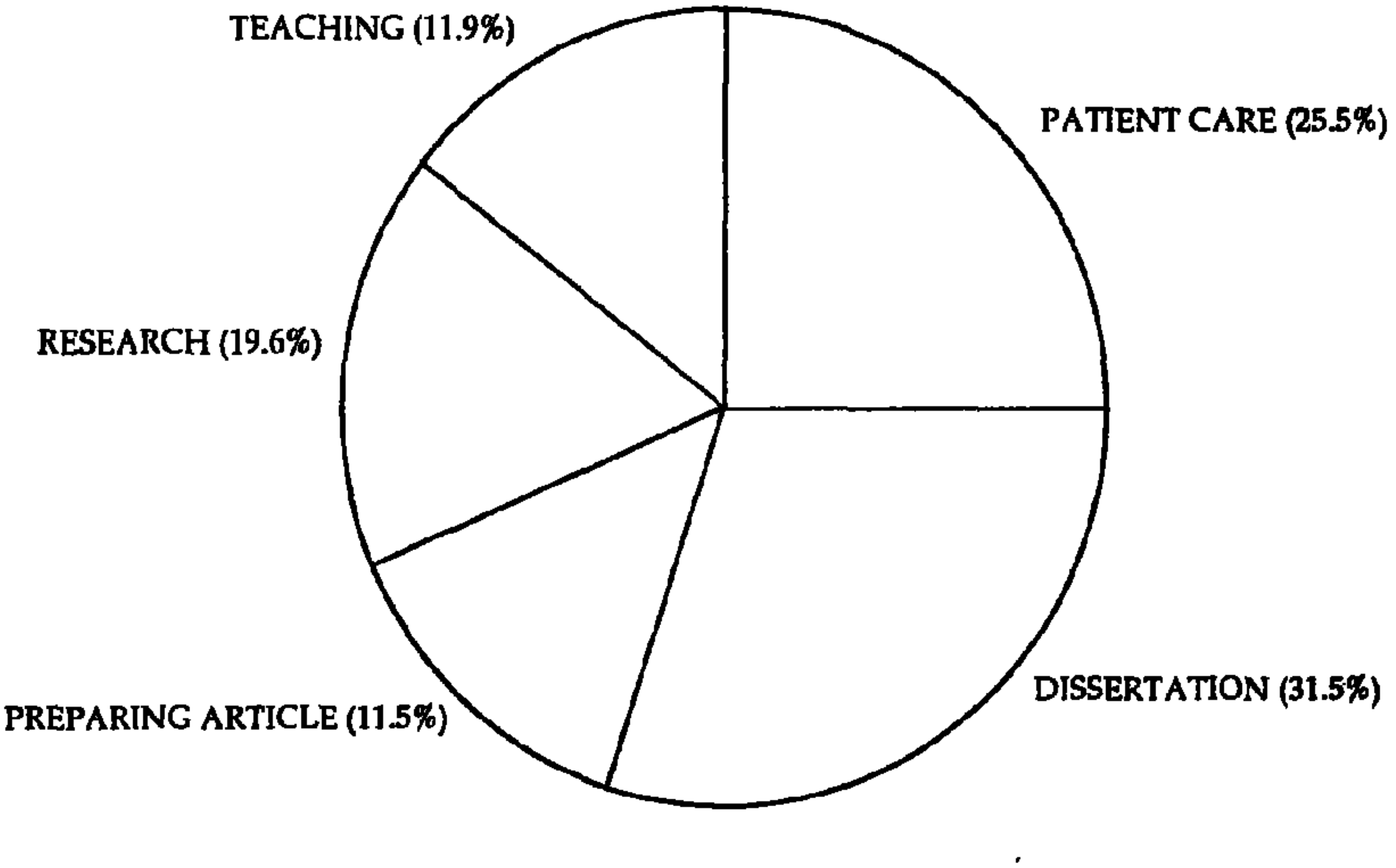


Fig - 2 : Analysis of Documents Retrieved



matics Center. Since MEDLARS connection is between 10.00 am to 5.00 p.m. the offline retrieval on CD ROM can be used throughout the day and night. (The library is open 8.00 am to 12.00 midnight).

E-Mail services are available for informal exchange of information among colleagues from Madras, to any city in India.

Training of the Personnel of Medical Informatics Centre

Librarian, a medical doctor, one computer programmer and an electronic engineer were trained by the National Informatics Center, New Delhi. They are located in the library and their services are used for Medical Informatics Center.

Retrieval of Documents

During this short period, the number of documents requested have increased as seen in Fig. 1. The requesters were drawn from Madras city and from the rural areas. Several requests were received from other states in the southern region. The searches were from the medical community and from other disciplines allied to the health sciences.

Fig. 2 shows that a large proportion of the searches were for the preparation of the dissertation (31.5%) followed by patient care (25.5%); 19.6% was for research; 11. 5% for preparing manuscripts, and 11.9% for teaching purpose.

TAN HESL NET - Tamil Nadu Health Sciences Library Network

The intent of the Tamilnadu Dr. M.G.R. Medical University is to provide "Library leadership" in this state for all the health sciences schools and colleges and to electronically link up libraries to retrieve MEDLARS information initially and for libraries to participate in the development of data bases. This information may be shared among the libraries and will assist in the judicial management of the limited library resources. In January 1993, a workshop on "Fundamentals of Medlars Searching" was co-sponsored by this university and the National Informatics Center, New Delhi with a view to expose the medical doctors and librarians to MEDLARS concept. 19 librarians and doctors attended and had "hands on experience".

The main controller of the micro earth station has two ports at present. From September 1993 one port is let out on "time sharing basis" to the affiliated institutions: namely Railway Hospital, Perambur; Apollo Hospital and Madras Medical College. These institutions are postgraduate training institutions affiliated to this university and the National Board, New Delhi.

Future

Plans are slated to update the controller of the micro earth station and the computer to enable more connections to other institutions. The advantage of this facility is that besides accessing MEDLARS information it can also be linked-up to share the local data bases once established. To cite an example, limited information from India is collated in the MEDLARS data bases. Only 22 Indian health sciences journals find a place in MEDLARS retrieval system. It is said that India publishes around 200 - 400 journals in health sciences. Therefore it is imperative that data bases need to be created to store the information available within the country. Several health sciences publications are brought out yearly by member states of SAARC which need to be collated in the form of a data base to be shared among health care professionals. The present databases will not be adequate for long, knowledge will only continue to expand exponentially.[4] There is also an interest from medical libraries outside India to access such information. This exercise may fetch additional revenue for the libraries.

Conclusion

This effort to establish the Medical Informatics Center with facilities to have MEDLARS, E-Mail and CD ROM to access biomedical information and to communicate with other institutions has made this model project of major significance at the Tamilnadu Dr. M.G.R. Medical University. The MEDLARS time sharing with other institutions is yet another milestone in bringing the health sciences libraries into an electronic environment. This project reinforces the library's leadership role of the use of computers in medical decision making and access to information resources. The present focus is to develop a "network culture" among health sciences libraries in the state of Tamilnadu.

[The authors wish to thank Dr. Vijayadithya, Mrs L. Chinnappa & Mr. Mohan of National Informatics Center; Dr. S. Granger of USA, USAID's consultant to India in June 1992. A special word of thanks to Mr. Jeyamani, Mr. Shanmugam, Mr. Ayyadurai, Mrs. Sundari, Mr. Bhoopalan, Mr. Krishnamurthy, Mrs. Laksham, and to Mr. K. Marimuthu for secretarial assistance].

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University, Industry and Society

Netting of Research and Resources

Anand P. Srivastava*

Cost of New Knowledge

While speaking before the Soviet Central Committee on February 5, 1990 Gorbachev said, "we were nearly one of the last to realise that in the age of information science the most expensive asset is knowledge".[1] Through this realisation Gorbachev had surrendered in the rings to the United States of America. Where are the Indian universities and industries as far as this seminal realisation is concerned? Perhaps they are not yet aware of its implications. Management of knowledge, research and information must have a national network where duplication is just impossible. Research is essential for development. Scientists and scholars conduct research and contribute to the growth of knowledge. New knowledge is used in industries. For conducting research and learning expensive global materials are acquired, processed and then used. Both the universities and Indian industries can neither afford to separately employ scientists and scholars nor acquire knowledge materials in uncoordinated manner. Each industrialist and vice-chancellor must acknowledge this unpleasant truth today and try to go for coordinated gathering of global knowledge and its usage through scientists and scholars in universities and industries. Now, India must have a National Knowledge-Information Corporation Ltd, where on the board of directors are some vice-chancellors and representatives of Federation of Chambers of Commerce and Industry, and the Government.

It is highly expensive to engage scientists and scholars separately by universities and industries. Industries may not be able to pay for them, therefore, practically go without them, as most are doing today; and the universities have them in bulk without much of relevant research agenda for them. Teaching load for them is limited to about 4 periods (not equal to 4 hours) per week—marred by strikes, vacations and unfriendly tropical weather. Now public funds are not forthcoming, nor shall it ever come in future in the style and details of the past. In case of Indian industries there hardly ever existed an R & D wing in true sense of the modern concept of it.

Symbiosis between University & Industry

In India the concept of the university in service of the society, including industry, was never realised in a conscious manner. Learning and research, in human history, has always been pursued in an active relationship with varying social order from age to age, as its service to the society. When the need was 'ecclesiastical knowledge' the centres of learning served it. When the emphasis rested on secular knowledge, the universities provided for it. As the survival of a society is heavily dependent on technological knowledge and research the same must be attended to by the universities all over the world. The Indian universities must undertake this modern task. In the post-Independence era, the feature of 100% financial assistance from governmental funds have made our universities detached from industry and commerce. The creation of the UGC and its growing roles have practically blinded the university faculty to its responsibility toward society and industry.

The industries have also not realised their obligations for enriching the universities. All industries did pay the bills for supplies of cotton, iron-ore and other physical raw materials received by them for production. But the cost of raw-materials of human resource, consumed by industries, was never paid by Indian commerce and industry. The Indian business community, in fact, never realised that education is a prime resource of manpower for them. Business philanthropy was seldom channeled to higher education and university research, while in developed countries about 50% of industry and business donations go to education and in return the business community is sufficiently represented on governing bodies of higher education. Some colleges in India are owned by business houses, but it is to be studied upto what degree they are an asset or a useful liability to the owners. It is essential in all respects that academic institutions and business houses should grow together in Indian Society, by one contributing to the development of the other. It is suggested that Indian commerce and industry must guide our universities and colleges on the following vital areas :

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* *University Librarian, Delhi University, Delhi.*

[1] Toffler, Alvin. *Power Shift.* N.Y., Bantam, 1991, P. 406.

i) How higher education should work with fewer teachers?

ii) How personnel management be conducted in higher education?

iii) How the universities should conduct research useful to Indian industry?

iv) How can the higher education become consumer controlled?

v) How the theory of punishment and reward must not be ignored?

Above all, universities must learn from industries how to undo the Parkinson's law on staff and productivity.

Support from Business & Industry to University

The business and industry take numerous benefits from higher education. The business and industry require educated and professional manpower from universities. In absence of this resource they cannot exist. The business world depends greatly on new scientific discoveries which universities are supposed to generate. In absence of this contribution business cannot prosper. It is, therefore, necessary that business and industry in India contribute properly to the growth of universities through suitable financial support and representation on university bodies as advisers, consultants; and through voluntary roles. The business and industry should in particular help the universities in following areas :

1) In establishing a joint information and library system by pooling their resources so that duplication of materials is avoided, and the same information and library system serves many units in both the sectors.

The concept of owning and using a library only by the traditional-owner-unit is no longer possible. It is just impossible in view of Gorbachev's statement of 5 February 1990. Joint use of knowledge by many is an essential conceptual innovation which must go into our mental frame. In this respect the companies should provide seed money to university libraries and the interest income should be used for acquiring journals, books, etc. Full information services should be provided to industries, by university library system, through technological devices and through mobile vans. Such a co-operation shall provide a great financial relief at both ends. Expensive materials acquired shall also get right quantum of utilisation, otherwise a journal costing lakhs of rupees shall continue to get used only by a scant numbers.

It shall be necessary to provide appropriate government to library and information system, which must get liberated from the traditional yokes, otherwise it shall fail to provide efficient services. Such a joint venture shall be possible because business corporation need university based knowledge and the universities need grants for financing the knowledge base. Both together can meet the costs in a better way than individually.

2) There are numerous fields in currency today wherein industry needs collaboration from a university. Biotechnology is a prime industry today. It shall be the biggest industry of XXI century. Industry shall not be able to manage this field single handed. Limited know-how is already available in certain universities. The collaboration must emerge in this field because the new field of biotechnology has emerged out of the womb of the university. In future, biotechnology shall be a very important research based sector, which Indian business alone can never manage.

3) Physical, chemical and engineering sciences industries today form greater part of Indian industries. The university can always assist industries in these sectors, whereby the industries shall be spared to employ scientists to a large extent.

4) Other important sectors, like, industrial enzymes, integrated circuits, locating numeral deposits, statistical and probability research and market surveys, etc, should seek collaboration from universities having expertise in these areas.

The industries should be sure that their input in universities shall largely benefit them. The business sector must emphasise suitable managerial pattern for financial control. In fact, the industry shall have to cultivate talent of entrepreneurship in professors, who administer universities.

University and Society

The independent India had a long march over turmoil during the last four decades. Our founding fathers were impressed by words like secularism, parliamentary democracy, welfare state, fundamental rights and all other niceties that had emerged in human experience by the middle of the

XX century. How has the nation progressed in relation to these values? What can be done to meet the hurdles in the way of perfecting these values? Has the concept of secularism really thrived in the country? Has the parliamentary democracy made corruption rampant? What are the evils of a hung parliament? How the hung state assemblies mar progress? There are hundreds of such vital issues before the nation, which require objective and comprehensive research.

Universities in various countries are involved researching on problems faced in their environment. No concrete evidence exists in Indian scene that universities are consciously associated in studying and researching on these vital issues. Federal and state governments in India have seldom sought assistance of universities in analysing these issues. Faculty members have not spent disturbed nights on thinking over these issues. They never took these issues under their domain. Our universities have not played the roles of *Scholarly Mart* and *Social Service Station*. Their intellectual potency has not been used to refine the affairs of the state. Universities possess knowledge and skills which must be used for *social ends*. Indian scholars have not constructed progressive and historical *montage* of complex developments in the country after independence. They have simply given newspaper statements. The government and society have never used them for these tasks. Thus, an academic specialist in India was not consulted and used for *mundane issues*. The society must even now exploit the potency of university scholarship in understanding and managing issues like, communal riots, secularism, parliamentary democracy, two-party system, elimination of corruption, regionalism, etc.

Avoid Triplication of Research Resource Building

Realising that knowledge is an expensive asset our universities, business houses and C.S.I.R. units must pool up their resources under one unified system with provision of modern information services to all concerned. Nehru and Bhatnagar, in 1950s, could not foresee that sophisticated communication tools shall soon develop and/or new knowledge shall become highly expensive by 1980s. Hence, they went on to duplicate research materials in C.S.I.R. laboratories. Indian business houses were late comers in the field of R & D. Even then they tried to triplicate within a geographical area, the acquisition of expensive knowledge independently in their premises. The point is, none of the three shall be able to develop resources individually. They must pool together in knowledge resource building. There is no alternative to it. With the help of modern technology of computers, communication devices including satellite, etc., a unified structure and long distance services are possible with efficiency. Investment in modern technology shall be many times lower than the cost involved in triplicating or duplicating of knowledge resources. This is now a global pattern and is prevalent in the first world. Ironically, the third world, which needs it most, could not conceive the concept of networking of knowledge resources. Now we should not waste further even a day in implementing the conceptual innovation in knowledge resource building, as a network.

It should never be forgotten that a university is a public institution. The society should not allow it to remain excessively at variance from the general public will. In modern times, it is unmistakably true that economic, social and cultural life of a society is influenced and largely determined by its colleges and universities. At the same time it is essential that affairs of management, control and supervision of colleges and universities, should not at all be influenced by politicians. There is a lot worthwhile left in a society after deleting the politicians. Representatives of society on management of colleges and universities should not be just anybody. They must be :

i) open minded,
ii) judicious,
iii) able to investigate issues thoroughly,
iv) able to give concrete plans and innovations in academic operation and student development,
v) able to generate and provide funds,
vi) do academic auditing of programmes from objectives to outcome, and
vii) able to do cost-analysis of expenses and student development.

There is no evidence that representatives of the society on Court/Senate, Syndicate/Executive Council of universities have really performed the above stated roles in our country. The society has to do so now.

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Indo-US Sub Commission Project Classroom 2000+

D.R. Goel*

This project interfaces live television with computer linked to the keypad response system and telephone. The system enables the student to respond individually to questions posed by the tele teacher and within seconds the answers of all the participating students are tabulated into a bar graph on air so that the class and teachers can monitor the comprehension of the course material. Individual student responses can be stored and made available to the class teacher.

Under the auspices of the Indo-US sub commission the Central Institute of Educational Technology (CIET) has been appointed as a nodal agency to execute the project — classroom 2000+. The project aims to demonstrate interactive distance learning techniques for improving student learning in Physics and Mathematics.

The demonstration in interactive teaching was confined to six schools — one Kendriya Vidyalaya Sangthan School each in Bombay, Calcutta, Hyderabad, Madras, Ghaziabad, and Senior Navyug School.

The technology comprised TV, Computer, Telephone, and Keypad. The lessons were telecast for class XII from 3 to 7 May 1993 in Physics and Mathematics from 09.45 to 10.30 hrs. and 11.15 to 12.00 hrs, respectively.

Participating schools were equipped with a TV receiver, Telephone, Computer, and Interactive Keypads.

The teachers' lessons were live from CIET TV studio to Doordarshan via Microwave link and uplinked to satellite for transmission. The communication between the students and teachers in the studio was established by telephone and keypad based computerised response system. The keypad response system consists of a keypad for each student, a classroom computer, two telephone lines and master computer at the CIET. Throughout each lesson the tele teacher asked questions and students entered their responses into their keypads. Within seconds the answers from all the students were tabulated into a bar graph which was visible to the students as well as the tele teacher. The CIET, CMS, Doordarshan, Kendriya Vidyalaya Sangathan, and Kentucky Educational Television Collaborated in the experiment. From each school there was a Coordinator to facilitate the experiment.

The present paper attempts to study the above experiment. The objectives of the study are presented as follows.

Objectives

1. To study the TV lessons in terms of their contents and presentation.

2. To study the extent and quality of interaction with the participating children through keypads and telephone.

Program Analysis

All the ten programs telecast from 3 to 7 May 1993 were viewed by the investigator. The program analysis is presented as follows.

Contents Covered, Key Pad Questions, and Phone Calls

The contents covered, key pad questions from the tele teachers and phone calls from the viewers are presented subjectwise and lessonwise as follows:

Physics

Lesson 1: Electric Charge

Contents Covered : Electric charge — like and unlike, Quantisation of charges, conservation of charges, additive property of charges, conductors and insulators.

Institute of Education, Centre of Excellence, Devi Ahilya Vishwavidyalaya, Bhanwar Kuwan, Indore-452001.

Key Pad Questions

Question	CR	%Rc
1. A repels B but attracts C then B and C	Attract each other	50
2. If -e is the charge on an electron, can a body possess a charge of 9.5 e ?	No	93
3. A metal coin develops charge q after losing some electrons. If e is the charge of a proton, the number of electrons lost by the coin is	q/e	20
4. When a glass rod is rubbed with a piece of silk, the rod is +vely charged. This is so because	the glass rod has lost electrons	97

CR - Correct Response
RC - Responded Correctly

Phone Calls from Viewers

Question	*Response*
1. How does a pen attract neutral paper particles?	S
2. Is the mass transferred in rubbing?	E

Response: E- Excellent, S-Satisfactory, US- Unsatisfactory

Assignment Questions

1. When a glass rod is rubbed with dry silk cloth, the silk cloth
   - a. loses electrons.
   - b. gains electrons.
   - c. neither gains nor loses electrons.
2. The ratio of the number of electrons to protons in Na^+ is
   - a. 11:10
   - b. 10:11
   - c. 1:1
   - d. infinity

   +NCERT Part-I Page 24 QNos. 1.1, 1.4, & 1.5

Lesson 2 : Electric Force

Contents Covered: Magnitude of electric force, permitivity of medium, what a Coulomb is, Coulomb's law in the vector form, electrostatic and gravitational forces.

Key Pad Questions

Question	CR	%Rc
1. The force between two point charges is found to be F. What will be the new force if the distance between them is doubled?	F/4	52
2. Two point charges of a certain distance experience a force F. Each charge is doubled in magnitude and distance between them is halved. The resulting force would become	16F	62
3. Two identical metal spheres A and B each carrying a charge +q are suspended in the open by nylon threads. The force of repulsion between them is measured to be F. Soon it starts drizzling. The new force of repulsion between the spheres is	<F	68

4. What is the force between the two charges of 1 micro Coulomb each separated by 1m in vacuum ?	$9*10^{-3}$N	44

Phone Calls from Viewers

Question	Response
1. Does quartz follow principle of quantisation of charges?	E
2. Whether the charges conserve in electron positron annihilation?	E
3. What is the difference between relative and absolute permitivity?	S
4. How a spark is produced when we change our clothes in the dark?	S
5. How does a charged body attract a neutral body?	E

Lesson 3 : Electric Field

Contents Covered: Electric field strength/intensity, gravitational intensity and electric intensity, representation of a field, electric field created due to charges, properties of electric lines of force, electric dipole.

Key Pad Questions

Question	Cr	%Rc
1. In gravitational field the quantity corresponding to electric field intensity is	g	66
2. In a uniform electric field E the magnitude of force experienced by the test charge Q is	QE	79
3. In an electric field at places where the field lines are close together the magnitude of electric field intensity is	large	91
4. Do the electric lines of force due to an electric dipole intersect each other?	No	83

Phone Calls From Viewers

Question	*Response*
1. Is the force of attraction between two stationary charges same as between two moving charges?	E
2. Does Coulomb's Law obey Newton's third law?	E
3. Do the charged particles always move along electric lines of force?	S
4. How the electric intensity varies along the axis of an electric dipole?	E

Assignment Questions

1. The SI unit of electric field intensity is

   a. NC^{-1}
   b. Cm^{-2}
   c. N
   d. Cm

2. When a unit positive charge is brought into the electric field of a source charge it experiences a force of

   a. Attraction
   b. Repulsion
   c. Attraction or repulsion

   +Assignment through the NCERT book

Lesson 4 : Electric Current

Contents Covered : Potential difference, electromotive force, potential gradient, electric current — definition, conventional current, electronic current, current density, flow of current in a metallic conductor.

Key Pad Questions

Question	*Cr*	*%Rc*
1. 1v/m equals	1N/C	0
2. Electric Volt (ev) is the unit for	energy	0
3. The work done in carrying a charge q between the points having potential difference v is given by	qv	60
4. 10^{12} electron pass from a point A to a point B in a conductor in 10^{-4} seconds. Then the current in mA is	1.6	70

Phone Calls from Viewers

Question	*Response*
1. How much is the work done in rotating an electric dipole?	E
2. Is EMF a unit of force ?	S
3. What is a potential gradient ? Can two equi-potential surfaces come in contact or intersect?	E
4. Is the current through conductors of different cross sections same or different?	E
5. Whether emf can be greater than potential difference?	S

Assignment Questions

1. The SI unit of emf is

   a. Joule
   b. Coulomb
   c. Newton
   d. Volt

2. EMF of a cell is a ...... quantity.

   a. Scalar
   b. Vector

   +NCERT Book p-92 QNO. 3.1 & 3.6

Lesson 5 : Resistance

Contents Covered : Resistance, resistivity, conductance and specific resistance, units of specific resistance, definition of Ohm's law, ohmic and non-ohmic conductors, verification of Ohm's law through animated form and experiment, resistances in series and parallels, experimental demo of resistances in series and parallel.

Key Pad Questions

Question	*Cr*	*%Rc*
1. The specific resistance of a conductor is measured in	ohm-metre	50
2. The resistance of a wire depends upon	its length, thickness & material	61
3. A wire of resistance one Ohm is stretched to twice its original length, then its new resistance is	4 Ohm	2
4. Which one of the following graphs represents the variation of current (I) with voltage for an ohmic conductor ?	straight line	84

Phone Calls from Viewers

Questions	*Response*
1. To get high current from a source of low voltage why the internal resistance offered by the conductor should be decreased?	S
2. When the drift velocity is so small, how is it that an electric bulb lights up as soon as we switch it on?	E
3. What happens to random velocity of electrons when electric field is applied across the conductor?	E

Physics : Open Phone in Session at end

Question	*Response*
1. Electric field lines are radial then why the lines of force are curved ?	US
2. What is the relation between conductivity and resistivity?	E
3. Is the relation between resistivity and temperature a linear one ?	E
4. A large number of free electrons are present in metals. Why there is no current in the absence of electric field across it?	E
5. The text says that good thermal conductors are also good electric conductors ....? (? not clear)	-

MATHEMATICS

Lesson 1 : Functions

Contents Covered · Definition, domain, co-domain or range of a function,

Functions — sin, tan, absolute value, signum

Key Pad Questions

Question		*Cr*	*%Rc*
1. The domain of the function f(x) = 2	is	A set of real numbers	48
2. The domain of the function f (x) = x	is	A set of real numbers	85
3. The range of f (x) = sin x is		closed interval [—1, 1]	91
4. The domain of f(x) = 1 if x <= 0 2 if x > 0	is	A set of real numbers	66
5. The range of the function f(x) = —1 x<0 0 x=0 1 x>0	is	{—1, 0, 1}	61
6. For what number in the domain is the graph of sgn function f(x) discontinuous ?		0	50

Phone Calls from Viewers

Question	*Response*
1. Draw the graph of f(x) = $\sqrt{x}$	E
2. What is the range of the above function?	E
3. What are asymptotes in a graph ?	E
4. What is the domain of cot(x) ?	US
5. Of which function the graph is parallel to the Y axis?	S

Assignment Questions

1. Draw the graphs of the following functions.

   i. $f(x) = sgn(x - 2)$
   ii. $f(x) = 1 - x$
   iii. $f(x) = 1/2x$
   iv. $f(x) = \cos 2x$
   v. $f(x) = \sin^2 x$

Lesson 2 : Operations on Functions

Contents Covered: Signum function, greatest integer function, sum, difference, product, quotient, composite, and inverse of two functions.

Key Pad Questions

Question	*Cr*	*%Rc*
1. The range of the greatest integer function $f(x) = [x]$ is	set of all integers	51
2. The domain of $(f+g)(x)$ where $f(x) = \sqrt{(2-x)}$ and $g(x) = 1/x$ is	$]-\infty,0[U]0,2]$	37
3. Choose appropriate domain of $f/g(x) = (x^2+1)/(x^2-1)$ where $f(x) = x^2+1$ and $g(x) = x^2-1$ is	$R-\{-1,1\}$	67
4. $f[g(1)]$ when $f(x) = x+1$ $g(x) = \sqrt{x}$ is	2	51
5. Volume of the sphere = $4/3\,\pi r^3 = g(r)$ and $r = f(t)$. Then volume can be written as	$4/3\,\pi[f(t)]^3$	54
6. The domain of $c\,f(x)$ where $f(x) = x^2$ and $c = 2$ is	R	70

Lesson 3 : Introduction to Limits

Contents Covered : Introduction to limits, right hand and left hand limits, basic principles of algebra of limits.

Key Pad Questions

Question	*Cr*	*%Rc*
1. Let $f(x) = x^2$ if $x + 2$ 5 if $x = 2$ then Lt $f(x)$ is $x \to 2$	4	58
2. Limit of $\mid x \mid /x$ as x tends to zero is	Does not exist	64
3. Lt $x \to 3$ $2x^2+5x+6$ is	39	88
4. Lt $x \to 0$ $(ax+b)/(cx+d)$ a, b, c, d + 0 is	b/d	67
5. Lt $x \to 2$ $(x^3-8)/x-2)$ is	12	47

Phone Calls from Viewers

Question	*Response*
1. What is the value of $Sin^{-1}(Sin\ 7\pi/6)$?	E
2. What is the exact difference between one to one and into function?	US

3. Does there exist a function which is both even and odd for a definite interval ?	E
4. If f(x) is an even function and g(x) is an odd then what will be the nature of the function f(x) if f(x) = f(x) * g(x) ?	E
5. If f(x) < g(x) Lt x->0 f(x) <= g(x)	US
6. Lt Lt x->2 f(x) = x->2 $\sqrt{(x^2-4)}$	S

Assignment Questions

Evaluate the following limits

1. Lt $[(x-1)^2+5]$
   x —>1
2. Lt $[(x-1)^2+5]$
   x—>0
3. Lt $(x^2-1)/(x-1)$
   x—>1

Lesson 4 : Limits

Contents Covered : Trignometric functions and their limits, Lt (sin x) /x=1, Limit may exist even if the function is not defined.

x—>0

Key Pad Questions

Question	CR	%Rc
1. Lt x—>0 cos(x) is	1	90
2. Lt 0—>0 (sin20)/0 is	2	76
3. Lt 0—>0 (sin30/sin50) is	3/5	72
4. Lt x—> π/2 (secx-tanx) is	0	86
5. Lt x—>0 $(\tan^{-1}x)/x$ is	1	40
6. Lt x—>1 1/(1-x) is	Does not exist	33
7. Lt x—>∞ (1-x)/(1+x) is	—1	60

Phone Calls from Viewers

Question	*Response*
1. If f(x) = 1/(1-x), g(x) = 1—x, f(x).g(x) = 1 then does Lt f(x) exist ? x—>1	S
2. Lt (sin x)/x ? x—>∞	E
3. Does Lt. sin 1/x exist ? x—>0	E
4. If x is an odd function and if Lt f(x) exists =0 ? x—>0	E
5. What is Lt $(\text{Cot}^{-1}x)/x$? x—>0	S
6. Lt $(e^x—1)/x$ x—>0	E

Assignment Questions

1. Lt (sin a0)/(sin bθ)
   0—>0
2. Lt (1—cos 40)/(1—cos 50)
   θ—>0
3. Lt 0 cosec θ
   0—>0
4. Lt (1—cos 0)/θ
   θ —>0
5. Lt $(1—\cos 0)/0^2$
   θ—>0
6. Lt e^x
   x—>1
7. Lt (x—1)/x
   x —>∞

Lesson 5 : Continuity

Contents Covered : What is continuity, examples of continuous and discontinuous functions, continuity of a function at a point, continuity of a function in an interval, sum and difference of two continuous functions, removable discontinuity, continuity or discontinuity of composite of two functions.

Key Pad Questions

Question	CR	%Rc
1. f(x) = (x+1)/((x—2)(x—3)) for x + 2, x+ 3 10 for x = 2 7 for x =3 then f(x) is	continuous in R —{2,3}	60

2. The function $f(x) = x^2$ when $x + 1$ $= 2$ when $x = 1$ at $x = 1$ is	discontinuous	67
3. For $f(x) = (x^4 - 16)/(x - 2)$ if $x + 2$ 16 if $x = 2$ the point of removable discontinuity is	2	53
4. $f(x) = kx^2$ if $x <= 2$ $= 3$ if $x > 2$ then k will be =	3/4	67
5. $f(x) = x \sin 1/x$ $x+0$ $=0$ $x=0$ at $x=0$ is	continuous	29
6. $f(x) = \sin ax/\sin bx$ if $x + 0$ $= b/a$ if $x=0$ a; b are non-0s at $x=0$ is	discontinuous	38
7. The point of removable discontinuity for $f(x) = (\tan ax)/bx$ if $x + 0$ $=a$ if $x = 0$ a, $b+0$ is	0	18

Phone Calls from Viewers

Question	*Response*
1. $\underset{x\to 0}{\text{Lt}}\ f(-x) = \underset{x\to 0}{\text{Lt}}\ f(x)$	E
2. $\underset{x\to 0}{\text{Lt.}}\ (e^{a} - e^{bx})/(\sin ax - \sin bx)$	S
3. $\underset{x\to \infty}{\text{Lt}}\ f(x)$	E
4. $\underset{x\to 0}{\text{Lt}}\ (\sin x)/x$	S

Assignment Questions

Discuss whether the following functions are continuous or not

1. $f(x) = x+5$ for all x
2. $f(x) = x^2+6x+3$ for all x
3. $f(x) = \sin ax/\sin bx$ $x <> 0$
   $= b/a$ $x=0$ at $x=0$
4. $f(x) = x$ if $x <> 0$
   1 if $x = 0$ at $x = 0$

Open Phone in Session Maths

Question	*Response*
1. If there are two functions, one is continuous and the other is discontinuous, if we total them what we will get, continuous or discontinuous function ?	E
2. If $f(x) <= g(x)$ Is it necessary that $\underset{x\to a}{\text{Lt}}\ f(x) <= \underset{x\to a}{\text{Lt}}\ g(x)$?	S
3. What is the difference between $\underset{x\to a}{\text{Lt}}\ f(x)$ and the value of the function at a point a?	E
4. What is the domain of the function $f(x) = \sqrt{(6x - x^2 - 5))}/(5^{x-2} - 1)$	E
5. $\underset{x\to 0}{\text{Lt}}\ (\tan x - \sin x)/x^3$	E
6. If x is an odd function $\underset{x\to a}{\text{Lt}}\ f(x)$ exists	E
7. Is there a function which is periodic but has no fundamental period ?	E

Content Analysis : The contents in most of the lessons were suitable for +2 beginners. Their difficulty level was normal. Most of the programs were suitable for differential learners. There was a logical sequence in the teaching points and in the programs.

Program Presentation : All the programs were TV genic. Language used was appropriate. Most of the programs observed speech skills and language elements. The lexicon, syntax, pronunciation, volume, speed of contents delivery, intonation, modulation, pauses, etc. were fine. Alongation and over stress was taxing at times.

All the presenters were with pleasant personality. Their levels of readiness, involvement, confidence, feeling, appreciation, action, and expression were quite appealing.

Contents Coverage and Treatment : The contents coverage was optimum in most of the programs. Each bit was treated very carefully. The explanations, illustrations, and demonstrations were very effective in all the programs. The captions, text, graphics, animation etc. were very strong.

Technology Adopted : The level of technology adopted was quite high. There was rare failure. It seems the space near the paper pad was very limited which was limiting the mobility of the TV teacher and the expert.

Effectiveness of Key Pad Questions

Structure : All the key pad questions were well structured.

Distribution over Contents and Time : Almost all the questions were evenly distributed over contents and time except in a few cases when the question density was comparatively higher on some contents and during particular period. The nature of contents demanded this unevenness.

Display Quality and Exposure Time : The questions were well displayed on the screen. The exposure/display time period was optimum.

Response Time: The response time was adequate with respect to all the questions.

Massive Feedback Through Bar Graph : The on line bar graphing through computer was very appealing. The percentage response against each alternative was computed instantaneously to provide feedback to the respondents and TV teachers. However, the additional feedback through bar graph during response time could be avoided by the TV teachers because it facilitated mechanical response.

Treatment of the Responses by the TV Teacher/Expert : Almost all the responses were well treated by the TV teacher and/or expert. The % response to the correct alternative to the key pad questions ranged from 0% to 93% in Physics, and from 2% to 91% in Maths.

Purpose of Key Pad Questions : Most of the key pad questions during lesson were for testing but a few which were for teaching.

Number and Nature of Questions : The questions were adequate in number. Also, they were at the level of contents and viewers.

Assignment Questions and their Treatment : At the end of each lesson assignment questions were given through TV screen and NCERT books. The correct responses were told in the beginning of the progressive lessons. Also, the responses were worked out where necessary.

Phone Calls from Viewers during Lessons and their Treatment

Phone Calls Reception : The reception of most of the STD calls was quite clear. Whenever, there was a phone call from a viewer the photo of the caller was also displayed. However, at times the duplication of name and place of the caller could be avoided by being careful while receiving the calls.

Level of Questions asked by the Viewers : The viewers asked a variety of questions—what, how, and why. Most of the questions were at the contents level, whereas, some at higher level. Some viewers asked plain questions, others asked reflective questions, whereas, a few asked asked-to-ask questions. Some viewers asked questions to complete their comprehension on what had gone by, whereas, others asked application questions.

Clarity of Questions asked by the Viewers : Most of the questions asked by the viewers were quite clear. A few questions were not well structured.

Treatment of Questions asked by the Viewers : Most of the questions were responded thoroughly skillfully by the TV teacher and/or expert.

Open Phone in Sessions in Physics and Maths at End

The phone in sessions were very lively. However, it was rather odd to start with the open phone in session in physics, where no phone calls were received for quite sometime. Some of the questions in physics could be responded more thoroughly. The phone in session in maths was quite lively. There were seven calls. Each call was attended to very thoroughly. There were two peculiar calls as follows:

Q. What is the domain of the function
$f(x) = (\sqrt{(6x—x^2—5)})/(5^{x-2}—1)$

E: What does 5^x mean ?

S: (no response)

E: You will never be in a position to understand with the type of mathematical background you are given in the school.

5^x= exp(x log 5). I once again emphasise that I will be extremely thankful if you would look at these questions and try to see that they are not upto the background of the students. Here is a question where the student is unaware that how to define such power. So, I ask you to be a little careful with that.

Another question was as follows with the interaction between the expert and the student.

Q. Is there a function which is periodic but has no fundamental period?

E: Will you please repeat your question ?

S: My question is — Is *there a function* which is periodic but has no fundamental period ?

E: Would you please tell me what a fundamental period is ?

S: It is the phase one of the function.

E : Phase one? I could not follow that.

S : It is the lowest phase value of the function.

E: What is the phase value ?

S: Hello

E: What is a phase value, Purnima ?

S: It is the lowest phase after which the function repeats itself, periodically.

E: I still do not follow your question. But please repeat your question then.

S: Is there a function which is periodic but has no fundamental period?

E: O.K.. I will explain the problem to you. Let us take a function f(x)=a.

You can take 1,2,0, whatever you like. It is periodic, it repeats itself.

Right ? You can choose any interval. There will be a periodic point for that function however, it has no lowest period. Does it answer your question?

S: Yes, thank you sir.

Interactive Mode in Distance Learning

Interactive mode was well demonstrated through a TV-COMPUTER-KEY PAD-STD network. Live interaction in distance instruction was well realised through key pad questions, presentation of % responses against each alternative to these questions and that of non-respondents in the form of bar graphs created through computers, phone calls from the viewers through STD and spontaneous response through TV, home assignments and confirmation of the responses to the assignment questions through massive mode. Some of the features of the experiment are presented as follows.

— It was specially designed for the distance learners. There was a live telecast from CIET studios through Doordarshan to five experimental schools in the interactive mode on selection through STD-KEYPAD-COMPUTER-TV-SATELLITE network and others in general.

— Interaction was realised through mass media and STD network.

— Photographs of the calling students had already been collected prior to their phone calls and presented at the time of phone call so as to have visual impact.

— Interaction was well realised through Keypad multiple choice questions from the tele teacher and answers to them by the viewers through their key pads in the classrooms connected to a computer there which in turn were connected to a main computer in the CIET were responses instantaneously processed and bar graphs drawn to provide immediate feedback to responding students and tele teachers. Responses were worked out by the tele teachers if found wanting.

— Questions from the viewers to the tele teachers through STD and responses from tele teachers through TV-Satellite.

— Assignments by the tele teachers to the viewers as home work and confirmation to the responses and explanation if necessary in the beginning of the progressive lesson through TV-Satellite.

— Over five days some of the viewers were very intimate to the tele teachers due to the frequency, and quality of interaction and mediated proximity.

— The lessons were well prepared by the experts. Demonstrations, illustrations, and explanations were effective. Graphics, animation, tables, etc. were impressive. The responses were quite spontaneous and very often precise.

— The lessons telecast were fully planned with respect to their contents and methodology.

— As a whole the responses to the keypad questions reveal that the comprehension level was quite acceptable.

— Two way communication was well demonstrated through this experiment.

— Programmes were devised in such a way that notes could be taken easily by the viewers.

— The tele-teachers used very suitable reinforcers.

— The different terms, concepts, principles, experiments were highly intelligible to the viewers.

— There was ample coordination amongst the different agencies who participated in the project.

Some Impeding Elements

—There was continuity in presentation. Only in one Physics program a demo was missed. It was covered afterwards by moving back to already covered contents.

—Skill of reception could be exercised more sensitively. There was no need to confirm the name and school of a phone caller who had already told it very clearly.

—Mostly the questions from the viewers were quite suitable and appealing. At times the phone in questions were very teasing to the experts. Questions of the nature $\underset{x \longrightarrow 2}{\text{Lt}}\, f(x) = \underset{x \longrightarrow 2}{\text{Lt}}\, (x^{2-4})$ were asked thrice by different viewers. These were very disturbing to the tele teacher being beyond the level of comprehension of the viewers at the +2 level. Such situations could have been treated more skillfully.

— Though very rare but at times there was a conflict as to who of the expert or the tele teacher treat the phone call. Such a state could be controlled.

— Feedback during the process of response bar display could have been avoided because it encouraged mechanical response by the responders adding to the longest bar—right or wrong.

— When there was no phone call for quite sometime during open phone in session in Physics the tele teachers could have more creatively utilised the wait state rather than getting disturbed.

— In one of the lessons the signum function could not be covered because of time management. Still an assignment question was asked to draw the graph of the function f(x) = sgn (x—2). There could be some mechanism to delete it.

— Continuity or discontinuity of composite of two functions was short of explanation again because of time management.

— Alternative "d" as infinity in the multiple choice assignment question —'The ratio of the number of electrons to protons in Na^+ ——' was not very appealing.

Concluding Remarks

The INDO-US sub commission Classroom 2000+ experiment was very well conducted. The TV-SATELLITE-KEYPAD-COMPUTER-STD network was very successful. The topics selected for the experiment were quite media genic. The tele teachers/experts were well identified. It seems every unit in the experiment was equally functional and cooperative. All the school coordinators and engineers did their jobs very well.

The lessons were very well designed and presented. The phone calls from the viewers were carefully received and meticulously responded. The interaction patterns were rich and healthy. There was inbuilt mechanism to judge the effectiveness of teaching in terms of achievement. The viewers gained quite significantly. The classrooms of 2000+ would demand more and more of such networks.

The Classroom 2000+ experiment was carried out with adequate preparation. It projected an excellent combination of different media. The results of such experiments need to be translated at the operational level.

How excellent is the class of learners who are located geographically far apart, yet close enough through TV in the interactive mode! Can east, west, north and south meet? How rewarding can be the global mediated meet! This is what the Indo-US sub commission Classroom 2000+ project presents and predicts.

But the most challenging question is how to realise the classrooms of 2000+ when a large majority of the schools are outdated. How to make them move with the time? For that we have to explore the potencies of a variety of media, particularly, mass media in different modes, such as, direct, repeat, talkback and interactive. Media cannot help us much in isolation. They have to be suitably mixed and integrated.

TO OUR READERS

Knowledgeable and perceptive as they are, our contributors must not necessarily be allowed to have the last word. It is for you, the readers, to join issues with them. Our columns are as much open to you as to our contributors. Your communications should, however, be brief and to the point.

Information Network for Osmania Varsity Colleges

Osmania University proposes to set up an Information Dissemination Centre (IDC), with an investment of Rs 15 lakh as part of the Platinum Jubilee activity. Expected to be functional from December 1993, the IDC will cater to the information needs of the academic community of various engineering and computer sciences disciplines.

The establishment of the IDC is being taken up to answer the needs of the academic community, i.e, the faculty and students of engineering in the disciplines of Bio-Medical Engineering, Civil Engineering, Computer Science and Engineering, Electrical, Electronics and Communication and Mechanical Engineering.

The centre will contribute immensely in bolstering the standards of engineering education and will modernise learning environment. This initial step will enable the university to easily take further steps to avail information dissemination facilities available worldwide, accessible through information networks.

The objective of the centre will be to acquire recent, authentic and scholarly international and national publications of repute and to disseminate technical information to the member colleges. This will obviate the need for subscribing to journals, costs of which are prohibitive and which are severely hampering access to such journals for the academic community.

The need for the centre was felt at the meeting of the Vice-Chancellor of Osmania University, Prof. M. Malla Reddy, with the members of the management of private engineering and MCA colleges, where suggestions for taking up relevant projects and to support the same was voiced by Prof. D.C. Reddy, Dean, Faculty of Engineering, OU, who later, as the Chairman of a sub-committee, worked out the modalities for the starting of the IDC.

The IDC will ensure subscription to major international journals in the disciplines of Bio-Medical Engineering, Electrical Engineering, Electronics and Communication Engineering and Mechanical Engineering.

At a later stage, the IDC may also acquire expensive courseware, instructional videotapes, dissertations, software library programmes and make them available to all colleges.

With the advent of Electronic Mail (E-Mail) and the availability of computer facilities at all the colleges and Inflibnet (Information Library Network) and Information Highway on the anvil, information dissemination electronically of acquired information and making it available to all colleges is proposed. These will be encouraged to make provision for E-Mail facilities.

It is envisaged that the IDC, in future, will also have an Electronics and Robotics Laboratory to be used by the various member colleges on/or 'time-sharing' basis.

The IDC is a collaborative effort of Osmania University with private affiliated colleges of engineering and colleges offering Master of Computer Application (MCA) programme. Towards the initial investment, six engineering colleges have contributed Rs 2 Lakh each and the colleges offering MCA have contributed Rs 25,000 each. The faculty of Engineering of Osmania University will contribute Rs 2.28 lakh. Subsequently, every year, engineering colleges have agreed to pay Rs 1 lakh each and the colleges offering MCA programme, Rs 25,000 each. It is also proposed to approach the University Grants Commission (UGC) for providing matching grant for the centre.

Indian Education System — Need for Change

Prof. C.N.R. Rao, Director, Indian Institute of Science, Bangalore, exhorted the educationists and students to start a movement for demanding better quality of education and teaching and stressed the need of over-hauling the current examination system, which was "outdated and unsuitable". He was speaking at the second National Debate on Indian Education System — Need for Change in Bangalore recently.

Prof. Rao in his keynote address assured that if there was strike in all the universities demanding better educational and teaching facilities he would like to lead such a campaign.

"Time has come to be practical and we cannot continue with outmoded examination system and bad quality of education available. It has never gone above mediocrity. And one reason for it was that investment in education was pathetic and in higher education practically nil", Dr Rao bemoaned.

Dr. Rao demanded decentralisation of education, examination system and emphasised the need for concentration on basic sciences. Similar views were expressed by Prof. Vishwanath D. Karad, Director of MAEER's MIT, Pune, who presented the theme paper, Prof. Vijay S. Rao and Dr Amrik Singh, former Vice-Chancellor of the Punjabi University, Patiala.

The debate organised by the Maharashtra Institute of Technology delved at length on the subject that Indian education system was in a state of turmoil and people in general and youth in particular were dejected and losing faith in the set up. Prof. C.N.R. Rao set the pace declaring that India was the biggest illiterate democracy in the world.

"A centralised machinery and authoritarian functioning suited the politicians well because they were exploiting people without being challenged", he said.

He said as president of the Bharat Gyan Vigyan Samiti "I'm concerned about the spread of scientific education in rural areas. But when there is no literacy what would science do there", he asked.

He decried that quality of teaching was bad at all levels in the country. Prof. Vishwanath Karad believed that one reason for this was that more and more students were opting for technical education like engineering and medical sciences rather than going in for pure sciences. As a result of this the real cream goes for specialised courses while only mediocres picked up basic sciences like physics, chemistry and maths as their subjects. Consequently these mediocres turn out half-hearted teachers.

He agreed with Dr Rao that education should be freed from the bondage of the Government. He was for voluntary organisations taking up literacy programmes but emphasised that Government must patronise these groups.

Prof. C.N.R. Rao not only wanted the spread of education to be a people's movement but demanded to bring health and family planning under the purview of these voluntary bodies. He forcefully asked for stopping all the university examinations and suggested that it should be left to colleges to give their degrees to the students. If they fared badly initially they would be losing out in the competition and as such would like to strive hard to equalise with others.

If colleges found it difficult to run individual examination a group of institutions could always do the job. He insisted that there is no scope left for kind of exams we conduct where students use unfair means to get 90 per cent marks without gaining any real knowledge of the subject. He said today's trend was that a student would prefer to go to a third rate engineering college rather than studying basic sciences and making a good teacher. He pays money, use methods unfair to examination to score good marks but ends up without a job.

He suggested that vocational training, public movement, new examination system aimed at testing the real ability of the student were the solutions. Prof. Rao cautioned that the Geo-political situation internationally was very fluid and under the circumstances Indian scientists could not afford to be mediocre in a competitive world. He wanted political interference to go in selections of vice-chancellors and demanded to do away with the managements systems in Indian.

He, however, believed that all was not lost. India was still producing excellent scientists despite all the constraints of Government investment in research and development and in the field of science. But need was to produce more such scientists and Government had to create facilities so that they could excel in their fields in India itself rather than going abroad, he felt.

Workshop on Funding Agencies

The College Development Council of Devi Ahilya Vishwavidyalaya (DAVV), Indore organised a two-day workshop on Funding Agencies for colleges and universities. The purpose of this workshop was to know about various agencies which provide funds for higher education in India and to discuss the policies and procedures of getting funds from these agencies.

Inaugurating the workshop Dr. U.S. Choudhuri, Vice-Chancellor, Devi Ahilya Vishwavidyalaya, emphasised the need of optimum use of available resources and exploring new avenues of getting funds. He was of the opinion that human development should be the ultimate aim of education and this could be achieved only if a sense of belonging prevailed amongst the teachers.

The inaugural address was followed by presentation of background paper by workshop

Director Dr. M.L. Kothari in which he presented an overview of higher education system in the country highlighting its strengths and major shortcomings. For improving the present situation he advocated the need to strengthen the planning aspect and financial resources of the colleges and the universities.

At the outset Dr. Kothari informed the participants about numerous agencies which provided finance for higher education and research in India. These included UGC, CSIR, MAPCOST etc. He also described the various schemes of UGC relating to development of human resources, faculty improvement, cultural exchange, continuing education, inter university centres, facilities for SC/ST, grants for games and sports and scheme for promotion of Yoga.

Dr. S.P. Gupta, Additional Secretary, UGC, gave an overview of the position of higher education in India and placed before the audience the problems created by unprecedented expansion of higher education.

Dr. G.G. Dandapat, Joint Secretary, UGC, explained in detail various schemes of UGC for development of colleges and suggested solutions for the problems faced by them. He also explained the Teacher Fellowship Scheme and advised the teachers to take advantage of this scheme to the full extent.

Shri B.P. Dube, Deputy Registrar, DAVV, explained UGC schemes for development of universities. He advocated the use of software and Management Information System for efficient working of the university.

Dr. A.P. Pande, Member, M.P. Uchcha Shiksha Anudan Ayog, Bhopal, explained in detail the functioning of Ayog vis-a-vis providing maintenance grant to different affiliated colleges and also gave information about pension scheme and starting of vocational courses by the Ayog.

Detailing the new avenues for financing higher education, Shri C.P. Modi, Registrar, DAVV, brought forth the difficulties of the traditional sources of finance and advocated adopting new schemes of financing like self financing courses, student loans, graduate tax, commercialisation of university research, consultancy by faculty, variable fee structure, industry endowed-chairs, donations by industry, industry-funded teaching departments and research fellowships and also involving community at large on massive scale in financing of higher education.

Dr. S.P. Gupta and Dr. K.P. Joshi, of DAVV, explained the UGC Special Assistance Programmes like DSA, DRA, CAS and also the modus operandi of getting finance under SAP.

Over 70 delegates including principals, Heads of Departments and university officers participated in the workshop. The participants were happy that the workshop provided them an opportunity to have face to face discussion of their problems with the authorities from UGC and Ayog.

Prof. Galtung Felicitated

Prof. Johan Galtung of Norway, who was awarded the Jamnalal Bajaj International Award for promotion of Gandhian values the world over, was recently felicitated by the Gujarat Vidyapith. Prof. Galtung was presented a shawl and a citation by the Vice-Chancellor of Gujarat Vidyapith, Prof. Ramlal Parikh. The citation described Prof. Galtung "a pioneer in the most promising field of Peace Research and Interdisciplinary Research and Social Sciences". And added, "The most innovative part of his thought is his impressive comprehension of life and thought of Gandhiji. It is remarkable that through his most critical examination of Gandhian views and ways, he has established enduring perceptions of world view of Gandhiji, who continues to be a beacon light for Peace Researchers and Peace Activists."

Speaking on the occasion, Prof. Galtung said the world today needed Mahatma Gandhi badly than ever before. He said if the world had to exist in a peaceful manner then it would have to follow the Gandhian path of non-violence and sarvodaya movement. The Gandhian philosophy was a torch-bearer in the world where religion had of late given an impetus to divisive forces.

Prof. Parikh praised the role of Prof. Galtung in promoting Gandhian values and said Prof. Galtung's innovative insight, sensitive concerns and incessant perseverance for the cause of peace and development had now become a part of modern knowledge. A recipient of the Right Livelihood Award, Prof. Galtung has helped to create a non-violent society through scores of publications.

Seminar on Autonomous Colleges

The Parvataneni Brahmayya Siddhartha Autonomous College of Arts & Science, Vijayawada, hosted the State-level Seminar on Autonomous Colleges recently. Hon'ble Minister for Education, Andhra Pradesh, inaugurated the seminar while Prof. Y.C. Simhadri, Vice-Chancellor, Nagarjuna University, presided over the Valedictory Function.

Attended by the Principals, Vice Principals/Lecturers of the Autonomous Colleges of Andhra Pradesh, the seminar discussed various aspects of the implementation of the scheme of autonomy.

The following recommendations were made at the seminar:

(1) The government and universities concerned be requested to allow the freedom of restructuring the existing outmoded courses covered by grant-in-aid and to introduce new courses taking into consideration the local needs of the society and without additional financial commitment to the government i.e. by effecting transfer of grant-in-aid from an outmoded course to a new course without detriment to the interests of the existing staff.

(2) The autonomous colleges be permitted to have the freedom of evolving their own admission policy subject to the reservation policy of the state government.

(3) The autonomous colleges be permitted to collect viable rates of tuition fee in respect of courses not covered by grant-in-aid.

(4) To allow the autonomous colleges the required degree of freedom necessary for designing new courses meaningfully and purposefully without any constraints.

(5) The state government be requested to prescribe separate workload pattern as prescribed by UGC viz. 16+4 periods of tutorials in respect of lecturers working in autonomous colleges.

(6) Separate Cells in state govt./UGC/university be created for expeditious disposal of matters relating to autonomous colleges.

(7) The UGC and the state government be requested to arrange for separate refresher courses for the teachers of autonomous colleges in the state and the representatives of universities functioning on statutory bodies of autonomous colleges.

(8) Financial assistance due to autonomous colleges be released promptly at the beginning of each academic year.

(9) The autonomous colleges the permitted to absorb staff appointed on unaided basis to teach restructured courses in aided vacancies as and when the need arises.

(10) The government be requested to extend the fifteen days of special casual leave available for university valuation work to that of autonomous colleges also.

Computers in University Budgeting

Prof. P. Subba Reddy, Director of Computer Centre of Osmania University, recently inaugurated the UGC funded ten-day programme on 'Computer Applications in University Budgeting' organised by the Training Centre for Non-Teaching Staff of Universities in India of Kakatiya University. In his address he said that application of computers in the university administration was not a difficult proposition as it was generally believed to be because the user of computer need not necessarily be an expert in its fabrication.

Prof. Reddy said that a computer could never replace a person but would only assist him in improving his efficiency and added that a person handling the computer need not be an expert in electronics or mathematics; it was enough if he was trained in the use of key-board. He strongly pleaded for the increased use of computers not only for academic purposes but for administrative purpose as well to improve the overall functioning of the university system.

Dr. K. Jayashankar, Vice-Chancellor of Kakatiya University, who presided, said that projections made in the budget estimates of a university did not always conform to the ground realities and thereby led to a host of operational difficulties in the management of the universities.

In spite of best of efforts by the universities on the one side and the funding agencies on the other, it had not been possible to evolve a mechanism through which the requirements of a university could be scientifically assessed and grants released by the funding agencies, the Vice-Chancellor said.

Dr. Jayashankar said that the universities asking for increased financial assistance everytime and the funding agencies having their own limitations, reduced the whole exercise to some sort of a bargain making the flow of funds dependent to a great extent on the bargaining capacity of the taker and the generosity of the giver. This, he said, was not a healthy situation and it was necessary to evolve norms and guidelines to facilitate flow of funds to the universities in a scientific manner to cope with the ground realities.

Underlining the importance of use of computers in the university administration specially in the area of financial management, Dr. Jayashankar felt that the use of computers would certainly introduce greater efficiency not only in preparing the budget estimates but also in closely monitoring the operation of the university accounts.

Over 20 participants of the cadres of Finance Officer, Assistant Registrar, Section Officer representing 10 universities from all over the country attended the programme.

Written Test for Lecturers in Bihar

The Bihar Government is reported to have decided to appoint lecturers for all universities of the State on the basis of written competitive test introduced for the first time in the history of higher education in Bihar by amending the Patna University Act and the Bihar State Universities Act during the last session of the Bihar Assembly.

The test will be conducted by the Bihar State University Service Commission in April for which application forms will be available in the Commission office from Dec. 27 to January 30.

According to Commission sources, there are around 400 vacancies of lecturers in all the 12 universities as no appointments have been made during the last 10 years. The test will be conducted in 35 subjects against the available vacancies till December this year.

According to the guidelines prepared by the Commission an applicant must have secured 55 percent marks at his postgraduate examination besides securing second class from matriculation to the degree stage. In case he has got a third class at a particular stage he must have secured a first class to compensate it.

After the test and the interview, the Commission will prepare a joint panel for all universities in all subjects and the candidates in their applications will have to give options in order of preference (one, two and three) as to which universities they wanted to join.

The panel will remain valid for one year. In making appointments, the Commission will observe the recently announced roster of reservation according to which 14 percent posts will be reserved for the members of Scheduled Castes, 10 percent to Scheduled Tribes, 14 percent to back ward classes, 10 percent to extreme, backward classes and two percent to the women belonging to the Scheduled Castes, Scheduled Tribes, backward classes.

A major benefit with this new system will be that the candidates won't have to apply separately for the appointment in all universities and it will also save the time and money of the Commission in engaging experts for all universities in all subjects. According to the provisions of the Act, the Commission will conduct competitive test for appointment of lecturers every year against the existing vacancies till December 31.

According to the Commission Secretary, Mr. E.J. Soren, the syllabus will be shortly finalised by the experts on the basis of the syllabi of the University Grants Commission and the universities of Bihar and will be made available to the candidates with the application forms to be supplied from Dec. 27.

Osmania Varsity Plans New Professional Courses

The Osmania University proposes to start nine professional courses for postgraduate students from the ensuing academic session.

The 'bridge' courses designed to impart skills to postgraduate students will enable them to apply their knowledge in their respective areas of specialisation. The one year post-diploma programmes will be in Materials Science and Technology, Digital Signals and Image Processing, Radar Communication and Technology, Radiation Physics, Medical Biotechnology, Microbial Gene Technology, Plant Biotechnology and Animal Biotechnology. Apart from these, a three-semester M Tech course in Applied Chemical Technology and P G Diploma in Food Preservation and Food Technology (one year post-B Sc) are also proposed to be started from 1994-95.

Revealing this in Hyderabad recently the Vice-Chancellor of the University, Prof. M. Malla Reddy, said these courses recommended by the Prof. Taqui Khan Committee would be started at a cost of Rs 10 crore with the financial assistance from the old students of Osmania University who were abroad and the state government. A special officer had already been appointed to work out the syllabi, the financial aspects and recommend the necessary infrastructure. Prof. Malla Reddy said the idea was to give a direction to postgraduate students to even set up their own industries.

Gugnani Named ISC's Representative in India

The governing board of the 'Institute for Scientific Co-operation' (ISC), Federal Republic of Germany, has appointed Mr. Hans Raj Gugnani, Chief Consultant at the Educational Consultants Consortium, as representative of the ISC in India and Asia in the field of science and education. Through this appointment the Board will meet better the conditions imposed by the 'Ministry for Economic Co-operation and Development' (BMZ) and the 'Society for Technical Co-operation' (GTZ) in view of the textbook series.

Mr. Hans Raj Gugnani has also been included as foreign co-editor and partner of the textbook series.

Mr. Gugnani can be contacted at Educational Consultants Consortium, K-49, Model Town, Delhi-110009.

News from Agricultural Universities

Integrated Weed Management

"Availability of optimum moisture is a limiting factor affecting the performance of existing herbicides in dryland areas. Therefore, we must focus our attention on developing a foliage applied herbicide suitable for dryland areas", said Dr. Sarvadanand Arya, Vice-Chancellor, Chaudhary Charan Singh Haryana Agricultural University (CCSHAU). He was inaugurating the Silver Jubilee International Symposium on Integrated Weed Management for Sustainable Agriculture at the CCSHAU recently. Dr. Arya said, the higher cost of herbicides was the major constraint in their adoption in many places. The work on improving the efficiency of existing herbicides by integrating them with other methods or by using them with surfactants or as herbicide mixtures needed to be done for reducing the cost of herbicides. Referring to the useful aspects of weeds, Dr. Arya exhorted the scientists to look into the possibilities of using chemicals extracted from weeds for their pesticide value and for herbal medicines. As the demand for biopesticides and herbal medicines was likely to increase, the prospects of utilising weeds for developing useful chemicals, making them into anti-pollutants or exploiting them for manure or paper were quite high, he observed. He cited the example of hyacinth which could be exploited for pollution management, paper manufacturing, green manuring and also as a source of petroleum. We should, therefore, concentrate on the useful aspects of weeds also, he added

Dr. Chester L. Foy, an eminent weed science researcher from the Virginia Polytechnic Institute, Virginia (USA) in his keynote address said that the consensus was that farmers would rely less on agricultural chemicals and fertilizers in the future. To do so, however, they would require more management and labour.

Referring to other future considerations, Dr. Foy said, "Herbicide mixture often will be the best method to improve control and reduce herbicide rates. At one time the basic challenge was to determine the most economical combination and cultural practices for each weed in each crop. Today, the challenge is more complex and many issues such as net profit, long term sustainability and environment must also be considered".

Dr. G.B. Singh, Director, Central Sugarcane Research Institute, Lucknow, who presided, said that selection of agronomically, economically and socially acceptable weed control systems required an understanding of the technical, economic and social realities of the area. In developing weed control alternatives identification of the target farmer group and the current agronomic practices needed to be studied. The process, he said, required a multidisciplinary team of agronomists, economists, extension workers and farmers.

According to Dr. R.K. Malik, Organising Secretary, the scientists will chalk out a strategy in the global context for weed management research. He said the main thrust of the seminar was to make direct and practical contribution to the economic and social advancement of the farmers by generating suitable weed control recommendations for different agro-climatic situations in different countries and places.

About 200 Indian and 40 foreign scientists from 15 different countries, viz. America, England, Germany, Denmark, Iran, West Indies, South Korea, Italy and United Arab Republic etc. participated in the seminar.

News from UGC

Countrywide Classroom Programme

Between 8th December to 14th December, 1993 the following schedule of telecast on higher education through INSAT-ID under the auspices of the University Grants Commission will be observed. The programme is presented in two sets of one hour duration each every day from 1.00 p.m. to 2.00 p.m. and 4.00 p.m. to 5.00 p.m. The programme is available on the TV Network throughout the country.

Ist Transmission

1.00 p.m. to 2.00 p.m.

8.12.93

"Cleaner Technologies for Development"

"Flowering the Bamboo"

"A Megalithic Village Comes to Life"

9.12.93

"Harvest of the year 2000"

"English Romantic Poetry-I"

10.12.93

"Fibonacci Numbers-II"

"India in 2000 A.D.-I"

"Between the Author and the Reader : The Publishing House"

11.12.93

"Van Gogh"

"New Horizons"

"The Week Ahead"

12.12.93

No Telecast

13.12.93

"Oscillation — Explanation and Definition"

"Low Cost Appliances for Plant Protection"

"Communication or Lack of it"

14.12.93

"Fluoride Hazards of Potable Water"

"Perimeters of Vision"

"Mass Literacy — The Third Eye"

IInd Transmission

4.00 p.m. to 5.00 p.m.

8.12.93

"Polluting the Environment"

"Biotransfer of Metallic Pollutans — Lead Poisoning"

"Urbanisation — Historical Perspective"

9.12.93

"The New Literacy : Storage and Processing"

"Glimpses of Ladakh-I"

"On Killing a Tree"

10.12.93

"Van Gogh"

"New Horizons"

"The Week Ahead"

11.12.93

No Telecast

12.12.93

No Telecast

13.12.93

"Oscillation : Important Parameters"

"The People on Market Street -VI — Wages and Production"

"Poultry Farming"

14.12.93

No Telecast

News from AIU

AIU to Organise Inter University Quiz Contests

The Association of Indian Universities (AIU), with the financial assistance from the Department of Youth Affairs & Sports, Ministry of Human Resource Development (HRD), Govt. of India, will be organising Inter University Zonal and National Quiz Contests on the theme "National Heritage of India" during 1993-94. Following universities will be hosting these contests :

Zone	*Host University*	*Cultural Coordinator*
East	Berhampur	Dr. Guru Charan Patra Prof. of IR & PM Berhampur University Bhanja Bihar Berhampur 760007
West	Goa	Dr. T.D. Halarankar Director, Students Welfare Goa University P.O. Taleigao Plateau Goa 403202
North	Haryana Agril.	Dr. R.D. Parashar Dean, Students Welfare Chaudhary Charan Singh Haryana Agril. University Hisar 125004
South	Andhra	Prof. B. Appa Rao Coordinator, Student Affairs Andhra University Visakhapatnam 530003
NATIONAL	Devi Ahilya	Dr. R.K. Dubey Dean, Students Welfare Devi Ahilya Vishwavidyalaya RNT Marg Indore 452001

The best four teams selected from each Zone will be invited to participate at the National level. The medium of contest will be in English/Hindi.

Detailed programme is being worked out and will be released shortly.

News from Abroad

North-South Networks for Medical Research and Public Health

The French National Institute for Health and Medical Research (INSERM) will finance the creation of 5 networks, for the year 1994, in the fields of Medical Research and Public Health as part of its policy for cooperation with developing countries.

The principle behind this collaboration is to bring together 2 or more French laboratories, of which one should be attached to INSERM, and 2 or more laboratories from the South block (preferably belonging to different countries) in order that they work on a jointly defined research project.

Each network will receive a total amount of 4,00,000 FF, that is, Rs 22 lakhs (excluding taxes) for a period of two years. These funds are to be used for :

- The installation and running of foreign laboratories which are part of the network.
- Network activities where a maximum of 1,00,000, FF, that is, Rs 5,50,000 (excluding taxes) for the stay and travels of both the French and the foreign teams.

All the fields related to medical research and health are considered. However, particular attention will be given to networks dealing with the following themes :

- microbial, parasital and viral infections
- AIDS (Acquired Immunodeficiency Syndrome)
- Genetic diseases
- Diabetes, Arterial hypertension
- Perinatal specialities
- Nutrition and Malnutrition
- Public Health
- Social perception of Health Problems

All applications will be processed under the direction of the French Coordinator who alone is responsible for outlining the scientific projects and forwarding them to the competent authorities in INSERM.

The networks will be established initially for a duration of two years which may be extended once, if necessary. Requests for renewal are examined along with applications for new projects.

Application forms can be obtained from: Department des Relations Internationales-INSERM, 101, Rue de Tolbiac, 75674 Paris Cedex 13.

Application forms, complete in all respects, should reach the above address latest by 15th February 1994.

Sports News

Sports and Personality Development

"Sports are not taken up for mere recreation or prestige but the participation in sports, rather influences all aspects of athlete's personality and help him in gaining poise and balance, refreshing the spirits, renewing the inner springs of faith and courage, mastering the skills, adjusting in the society and meeting the strains of modern life with ease and calmness". Thus observed Drs. N K Chadha and Gurdeep Singh of the Departments of Psychology and Physical Education, University of Delhi in their paper "Development of Ego States (TA) through Sports Participation" presented to the FISU/CESU Conference on 'Change and the Human Dimension of Physical Activity' held as part of the World University Games Buffalo '93 (USA) and organised in cooperation with the National Association of Physical Education in Higher Education, USA.

To explore the impact of the sports on the development of personality, the authors undertook a study of the impact of sports on the development of ego states given by Berne like Parent ego state, Adult ego state and Child ego state. To measure the ego states, egogram was developed by Dr. Chadha and tested for its psychometric properties. The egogram contained 50 items to be responded on the five point likert type scale ranging from 'extremely well' to 'not at all'. The egogram was administered on 80 students of Delhi University who had participated in various sports at the college and university level. This group of sports participants were compared with the students who had not played any game in their life. The two groups were compared on the basis of inferential statistics. The results very clearly indicated that the students who have been playing sports had developed better ego states. In other words, the sports have developed the adult ego state which is the most important ego state for rational and logical thinking. The profiles were also prepared for both the groups to project the best possible profile relating to ego states.

COMMUNICATION

Library Automation and Library Science Courses

These days librarians are facing problems because of the new technologies anticipated to be used for information retrieval.

Age old styled courses of Library Science now need to be rejuvenated and made more practical to meet the challenges of automation in librarianship. This is the right time to think over the feed that is to be provided to library students and to prepare new Syllabi for B.Lib Inf. Sc & M. Lib. Inf. Sc. courses. Laboratories for the same shall have to be set up in each school of Library and Information Science. At the same time purely theoretical contents are no longer required in these syllabi.

At least two months practical training in computer programming and application shall have to be included, as given below, in the courses at Bachelor & Master level.

1. *B.Lib. Sc Practicals in Information Technology*

(a) Personal computer and DOS commands : an introductory course — 2 weeks.

(b) Advanced MS-DOS ver 5.0/6.0 — 2 weeks.

(c) Word Star, Word Perfect Softword — 2 weeks

(d) Programming in DBase III/DBase IV and Marcos in Lotus — 4 weeks.

2. *M. Lib. Sc Practicals in Information Technology (Specialisation)*

(a) Retrieval of information with the help of CD-ROMs and other softwares in Pure Sciences/Applied Sciences/Social Sciences/Humanities, etc. — 2 weeks.

(b) National and international information products and services and how to make use of them — 2 weeks.

(c) Visits to libraries having satisfactory automation — 2 weeks.

(d) Library standards for automation — 1 week.

(e) Archival management of informative material — 1 week.

We do have practicals in book classification, cataloguing and now we need to include practicals in indexing and abstracting from at least one source in each segment of knowledge like social sciences, medical and veterinary sciences, agricultural science, biological science, etc. in addition to application of computer in setting up libraries as information technology centres.

I hope this will help to create new hope for the next generation of librarians and thus library schools/departments will not come to a stage of closure in the near future.

Har Prem Pal Singh,
Asstt. Librarian,
Birsa Agricultural University,
Ranchi-834 006.

Strategy for Curbing Communalism

At a crucial moment when India is jeopardised by the communal forces, Prof. A.K. Ghosh deserves eulogy for his bold venture to chalk out strategy for curbing communalism through curriculum (*University News*, dated August 16) very intelligently, particularly in our country where secular or religious education is not permitted by the constitution. Now, it is the duty of the policy makers in education to implement Prof. Ghosh's suggestions, of course, after deliberations, discussions, considerations, modifications, etc. But I appeal to the educationists and the policy makers not to shrug off the seriousness of the theme and views of Prof. Ghosh.

Prof. R.K. Poddar,
Calcutta University.

RESEARCH IN PROGRESS

A list of research scholars registered for doctoral degrees in Indian Universities

PHYSICAL SCIENCES

Mathematics

1. Barnawal, Bijay Kumar. On almost Grayan manifolds. BHU. Dr R H Ojha, Department of Mathematics, Banaras Hindu University, Varanasi.

2. Chaturvedi, Mritunjay. Estimation of reliability characteristics for certain distribution. BHU. Dr Umesh Singh, Department of Statistics, Banaras Hindu University, Varanasi.

3. Pandey, Akhilesh Kumar. Concepts of torsion and injectivity in modules. BHU. Dr S A Paramhans, Department of Applied Mathematics, Banaras Hindu University, Varanasi.

4. Paul, Trishna. Heat and mass transfer in composite systems. BHU. Dr A K Singh, Department of Mathematics, Banaras Hindu University, Varanasi.

5. Rajesh Kumar. Some estimation problems related to ranking and selection. Panjab. Prof Harshinder Singh, Department of Statistics, Panjab University, Chandigarh and Dr Neeraj Misra, Department of Statistics, Panjab University, Chandigarh.

6. Satheesh Kumar C. On some contributions to the study of discrete distributions. Kerala. Dr T S Krishnan Moothathu, Reader, Department of Statistics, University of Kerala, Kariavattom.

7. Singh, Anil Kumar. Separation axioms in Fuzzy universal-topology. BHU Dr (Mrs) R Srivastava, Department of Applied Mathematics, Banaras Hindu University, Varanasi.

8. Singh, Rakesh Pratap. Some problems in the inferences for reliability models. BHU. Dr S K Upadhyay, Department of Statistics, Banaras Hindu University, Varanasi.

9. Singh, Shailendra Vikram. Projective and injective modules and rings. BHU. Dr B M Pandeya, Department of Applied Mathematics, I T Banaras Hindu University, Varanasi.

10. Singh, Tribhuwan. On differential structures. BHU. Dr R H Ojha, Department of Mathematics, Banaras Hindu University, Varanasi.

11. Thakur, Anuj Kumar. Geometrical aspects of magneto fluid flows. BHU. Dr R B Mishra, Department of Mathematics, Banaras Hindu University, Varanasi.

12. Tripathi, Kamal Niwas. Some studies in Mathisi distribution in general relativity and in alternative theories of gravitation. BHU. Dr Abdussattar, Department of Mathematics, Banaras Hindu University, Varanasi.

13. Upadhyay, Dinesh Chandra. Certain Bayes techniques in the study of life testing problems. BHU. Dr S K Upadhyaya, Department of Statistics, Banaras Hindu University, Varanasi.

14. Upadhyay, Krishna Nand. Fluid Mechanics : Certain studies in turbulence and MHD turbulence. BHU. Dr Nawal Kishor, Department of Mathematics, Banaras Hindu University, Varanasi.

Physics

1. Arvind Kumar. In-beam gamma ray spectroscopy of some tellurium nuclei. Panjab. Dr Nirmal Singh, Department of Physics, Panjab University, Chandigarh and Prof P N Trehan, Department of Physics, Panjab University, Chandigarh.

2. Ashwani Kumar. Spin dynamics in magnetic alloys with admixed interaction. Panjab. Prof A K Grover, Department of Physics, Panjab University, Chandigarh.

3. Bhatnagar, Vipin. Search for top X in the electron-muon channel at 1.8 TeV with D-zero. Panjab. Dr Suman Bala, Department of Physics, Panjab University, Chandigarh and Prof J M Kohli, Department of Physics, Panjab University, Chandigarh.

4. Gill, Pritam Singh. Investigations in quark mixing, cp-violation and mass-matrices. Panjab Dr M M Gupta, Department of Physics, Panjab University, Chandigarh.

5. Harjeet Kaur. Nuclear shapes at high spins of some nuclei in mass A = 120 region. Panjab. Dr Nirmal Singh, Department of Physics, Panjab University, Chandigarh.

6. Jagbir Singh. Nuclear structure at high spin of some nuclei near Z 50 shell closure. Panjab. Dr Nirmal Singh, Department of Physics, Panjab University, Chandigarh.

7. Jayasree, R S. Spectroscopic investigation of crystals. Kerala. Dr V Unnikrishnan Nayar, Prof, Department of Physics, University of Kerala, Kariavattom.

8. Joymon, D. Electrodynamics of equatorial ionosphere. Kerala. Dr S R Prabhakaran Nayar, Prof, Department of Physics, University of Kerala, Kariavattom.

9. Kam, Rakesh Kumar. Synthesis and characterisation of storage materials O S crystalline (Hydrogen and HTSC). BHU. Prof O N Srivastava, Department of Physics, Banaras Hindu University, Varanasi and Dr A K Singh, Department of Physics, Banaras Hindu University, Varanasi.

10. Morsagh, Mansoor Reza. Spectroscopic studies of diatomic molecules containing sulphur atom in U V and VUV region. Panjab. Dr C G Mahajan, Department of Phyisc, Panjab University, Chandigarh.

11. Pathak, Ramesh Kumar. Synthesis and characterization of rapidly solidified materials. BHU. Dr R S Tewari, Department of Physics, Banaras Hindu University, Varanasi.

12. Rajappan, M L. Crystal growth. Kerala. Dr V K Vaidyan, Prof, Department of Physics, University of Kerala, Kariavattom.

13. Sharma, Shyam Gopal. Study of particle size distribution, concentration profile and chemical composition in the environ-

ment using instrumental methods. Panjab. Dr M S N Srinivas, Scientist, C S I O Sector 30, Chandigarh and Dr V R K Murthy Department of Physics, Panjab University, Chandigarh.

14. Solomon, Sam. Preparation, characterisation and properties of some perovskite microwave dielectric resonators. Kerala. Dr M T Sebastian, Scientist, Regional Research Laboratory, Thiruvananthapuram.

15. Sumabai, K C. Dynamics of the atmospheric boundary layer. Kerala. Dr K Narayanan Nair, Head, Boundary Layer Physics, Space Physics Laboratory, Vikram Sarabhai Space Centre, Thiruvananthapuram.

16. Sunil, T. Study of coastal atmospheric boundary layer. Kerala. Dr K Narayanan Nair, Head, Boundary Layer Physics, Space Physics Laboratory, Vikram Sarabhai Space Centre, Thiruvananthapuram.

17 Tripathi, Awadhesh Kumar. Instabilities in space plasma. BHU. Dr S P Mishra, Department of Applied Physics, Banaras Hindu University, Varanasi.

18. Upadhyaya, Rajiv. Growth and characterization of novel materials by X-ray and electron diffraction techniques. BHU. Dr R S Tiwari, Department of Physics, Banaras Hindu University, Varanasi.

Chemistry

1. Dasgupta, Bireshwar. Synthesis of novel amino acids and peptides. BHU. Dr R Balaji Rao, Department of Chemistry, Banaras Hindu University, Varanasi.

2. Lal Bahadur. Metal (II and III) complexes with O, S, N donor ligands. BHU. Dr K K Narang, Department of Chemistry, Banaras Hindu University, Varanasi.

3. Mukherjee, Joydeep Metal-dye complexes and their electroanalytical behaviour. BHU. Dr A K Ghose, Department of Chemistry, Banaras Hindu University, Varanasi.

4 Rai, Ramanand. Chemistry of eutectics and molecular complexes. BHU. Dr U S Rai, Department of Chemistry, Banaras Hindu University, Varanasi

5. Ranbir Singh. Studies on electron densities of many-electron systems. Panjab. Prof B M Deb, Department of Chemistry, Panjab University, Chandigarh.

6. Shirke, Sunita Digambar. Synthesis of some new benzofuran and benzopyran derivatives as possible insecticides and pesticides. Dr M B Deshmukh, Department of Chemistry, Shivaji University, Kolhapur.

7. Tripathi, Aravind Kumar. Development of newer technique for detection and determination of environmental pollutants BHU Dr A K Ghosh, Department of Chemistry, Banaras Hindu University, Varanasi.

8 Yadav, Sunil Kumar. Voltametry : Solution chemistry. BHU. Dr H P Srivastava, Department of Chemistry, Banaras Hindu University, Varanasi.

Earth Sciences

1. Chaudhary, Deependra Nath. Geodynamics and geological modelling of Himalayan region BHU. Prof A Ram, Department of Geophysics, Banaras Hindu University, Varanasi.

2. Lalta Prasad. Micrometeorology. BHU. Dr D V Vishwanadham, Department of Geophysics, Banaras Hindu University, Varanasi.

3. Mohapatra, Suryanarayan. Litho stratigraphic and structural controls in the morphologic evolution of area Hanali Leh through remote sensing application. BHU. Dr R A Chansarkar, D T R L (DRDO), Ministry of Defence, Metcalfe House, Delhi and Dr H B Srivastava, Department of Geology, Banaras Hindu University, Varanasi.

4. Muraledharan, C. Genesis and geochemistry of sulphide occurrence associated with high grade gneisses of North Kerala, India and their secondary dispersion. Kerala. Dr P T Roy Chacko, Lecturer, Department of Geology, University of Kerala, Kariavattom.

5. Ram, Subhash. Development of new algorithm for seismic data processing. BHU. Dr R D S Kushwaha, Department of Geophysics, Banaras Hindu University, Varanasi.

6. Roy, Sukanto. Geothermal and radiometric investigations for crustal thermal structure. BHU. Dr R U M Rao, National Geophysical Research Institute, Hyderabad and Dr T Lal, Department of Geophysics, Banaras Hindu University, Varanasi

7. Virendra Kumar. Electromagnetic modelling for different types of structures. BHU. Dr G S Yadav, Department of Geophysics, Banaras Hindu University, Varanasi.

Engineering & Technology

1. Agrawal, Arun Kumar. Study on genetic algorithms applied to neural networks. BHU. Prof Y P Singh, Department of Computer Engineering, Banaras Hindu University, Varanasi.

2. Agrawal, Naveen. Behaviour of beam column joint in R C frame. BHU. Prof B N Roy, Department of Civil Engineering, Banaras Hindu University, Varanasi and Dr V Kumar, Department of Civil Engineering, Banaras Hindu University, Varanasi.

3 Azmi, Wamik. Kinetics of enzyme production. BHU Dr S K Srivastava, School of Biochemical Engineering, Banaras Hindu University, Varanasi.

4. Bagai, Deepak. Uncertain reasoning and qualitative simulation in artificial intelligence. Panjab. Dr Y C Chopra, Head, E & Ec Department, Punjab Engineering College, Chandigarh.

5. Bahadur Singh. Use of artificial intelligence for integrated process planning in a manufacturing system Panjab. Dr R N Nauhria, Department of Production Engineering, Punjab Engineering College, Chandigarh.

6. Dinesh Chander Engineering criteria for apportionment of inter-state river waters. Panjab. Dr S K Goyal, Prof, Department of Civil Engineering, Punjab Engineering College, Chandigarh.

7. Jha, Mamta. Interaction of electromagnetic waves with biological systems. BHU. Dr S P Singh, Department of Electronics Engineering, Banaras Hindu University, Varanasi.

8. Jha, Shanker. Preparation and characterisation of ceramic powders. BHU. Dr Om Prakash, Department of Materials Science and Technology, Banaras Hindu University, Varanasi and Prof V B Tare, Department of Metallurgical Engineering, Banaras Hindu University, Varanasi.

9. Kapur, Rakesh. Development of algorithm for throughput evaluation of radio terminals in wide area telecommunication services. Panjab. Dr T S Kamal, Prof, E & Ec Department, Panjab Engineering College, Chandigarh and Dr P S Mundra, General Manager, Punwire, Mohali.

10. Lohani, Rajesh Basant. Electrical and optoelectronic effect in semiconductor devices. BHU. Prof B B Paul, Department of Electronics Engineering, Banaras Hindu University, Varanasi.

11. Mishra, Awadhesh Kumar. Production of glucose isomerase. BHU. Dr (Mrs) M Debnath, School of Biochemical Engineering, Banaras Hindu University, Varanasi.

12. Mohan Ram Application of neural networks. BHU. Shri Y S Murthy, Defence Research and Development Organisation, Hyderabad and Prof S K Kak, Department of Electronics Engineering, Banaras Hindu University, Varanasi.

13. Rehani, Virender. Abstraction and recognition using artificial neural networks. Panjab. Dr Y L Chopra, Head, E & Ec Department, Panjab Engineering College, Chandigarh and Dr T S Kamal, Prof, E & Ec Department, Panjab Engineering College, Chandigarh.

14. Singh, Prithvi Raj. Utilization of minimization of waste in sugar industry. BHU. Dr B B Bansal, Department of Mechanical Engineering, Banaras Hindu University, Varanasi.

15. Singh, Raghvendra Pratap Purification of rice bran oil. BHU. Dr A K Verma, Department of Applied Chemistry, Banaras Hindu University, Varanasi and Dr R Singh, Department of Applied Chemistry, Banaras Hindu University, Varanasi.

16. Singh, Sansar. Some investigations on electro-magnetic radiating circuits and propagation of E M wave in adverse atmospheric conditions. BHU. Dr B R Vishvakarma, Department of Electronics Engineering, Banaras Hindu University, Varanasi.

17. Sinha, Thakur Pankaj Kumar. Water supply and waste water management of a river city of India : A case study of Varanasi. BHU Dr U P Singh, Department of Civil Engineering, Banaras Hindu University, Varanasi.

18. Srinivas, K. Ground control in rock excavation BHU. Prof D P Singh, Department of Mining Engineering, Banaras Hindu University, Varanasi.

19. Srivastava, Navin Prakash. Microprocessor based protection systems. BHU. Dr D S Chauhan, Department of Electrical Engineering, Banaras Hindu University, Varanasi.

20. Srivastava, Rajesh Kumar. Geostatistical applications in mine planning. BHU. Prof R Nath, Department of Mining Engineering, Banaras Hindu University, Varanasi.

21. Srivastava, Vivek Kumar. Industrial engineering and management. Dr S K Sharma, Department of Mechanical Engineering, Banaras Hindu University, Varanasi and Dr J N Dube, Department of Mechanical Engineering, Banaras Hindu University, Varanasi.

22. Sujatha, K M. Removal of heavy metals from industrial wastewater using low cost adsorbents. BHU. Dr S Kumar, Department of Chemical Engineering, Banaras Hindu University, Varanasi.

23. Tiwari, Amar Nath. Environmental assessment and management in a surface mine : A study on the improvement of performance of grinding. BHU. Prof K K Gupta, Department of Mining Engineering, Banaras Hindu University, Varanasi.

24. Tiwari, Vivekanand. Studies on some dielectric antennas. BHU. Dr S P Singh, Department of Electronics Engineering, Banaras Hindu University, Varanasi.

25. Tripathi, Pawan Kumar. Water supply and wastewater management in an Indian river city : A case study of Varanasi. BHU. Prof V B Mishra, Department of Civil Engineering, Banaras Hindu University, Varanasi.

26. Unnikrishnan, P V Data compression techniques for diagnostic imaging. Kerala. Dr K Sivaraman, Principal, College of Engineering, Trivandrum.

27. Upadhyay, Shail. Some studies on valence compensated perovskites BHU. Dr Om Prakash, School of Materials Science and Technology, Banaras Hindu University, Varanasi and Dr Devendra Kumar, Department of Ceramic Engineering, Banaras Hindu University, Varanasi.

28. Verma, Shikha. Development of measuring techniques for some bioprocess parameters. BHU. Prof S N Upadhyaya, Department of Chemical Engineering, Banaras Hindu University, Varanasi

BIOLOGICAL SCIENCES

Biotechnology

1. Ganguli, Abhijit. Microbiology of detoxification of chromium polluted industrial effluents. BHU. Dr A K Tripathi, School of Biotechnology, Banaras Hindu University, Varanasi.

2. Lal, Ashish Kumar. Studies on enzymes. BHU. Dr A M Kayasthi, and Dr O P Malhotra, School of Biotechnology, Banaras Hindu University, Varanasi.

Microbiology

1. Mukherjee, Monisha. Immunopathology of experimental filariasis. Dr R K Chatterjee, Deputy Director, Central Drug Research Institute, Lucknow and Dr M R Sen, Department of Microbiology, Banaras Hindu University, Varanasi.

2. Sharma, Rakhi. Molecular biology of bacteriophage MB 78 genome. BHU. Prof M Chakravorty, Molecular Biology Unit, Banaras Hindu University, Varanasi.

Botany

1. Singh, Anil Kumar. Growth and development of edible mushrooms on sugarcane substrates under stress conditions. BHU. Prof Bharat Rai, Department of Botany, Banaras Hindu University, Varanasi.

2. Mishra, Sushma. **Organic matter decomposition and soil nitrogen availability in tropical dry deciduous forests.** HS Gour. Dr P K Khare, Department of Botany, Dr Hari Singh Gour Vishwavidyalaya, Sagar.

Zoology

1. Singh, Veena. **Studies on ecology and histochemistry of some selected digenetic trematodes.** BHU. Dr A K Maurya, Department of Zoology, Banaras Hindu University, Varanasi.

2. Sreedhara Kurup, P. **Some aspects of biology and ecology of soil coleoptera.** Kerala. Dr N Chandrasekhara Kurup, Department of Zoology, N S S College, Pandalam.

3 Sumangla Devi, S **Comparative study of the biochemical and histochemical aspects of spontaneous atherosclerosis, experimental atherosclerosis and myocardial infarction.** Kerala. Dr V Krishnan Nampoothiri. Prof, Department of Zoology, S D College, Alappuzha

4. Varghese, Reni. **Studies on nematodes associated with Yams and their pathogenicity** Kerala. Dr N Chandrasekhara Kurup, Department of Zoology, N S S College, Pandalam and Dr C Mohandas, Scientist, Central Tuber Crops Research Institute, Sreekariyam, Thiruvananthapuram.

Medical Sciences

1. Dwivedi, Akhilesh Kumar. **A study on economic consequences in cancer patients.** BHU. Dr R N Mishra, Department of Preventive and Social Medicine, Banaras Hindu University, Varanasi.

2. Dwivedi, Arun Kumar. **Response of Uttar-Vasti in the management of BPH.** BHU. Dr G C Prasad, Department of Shalya Shalakya, Banaras Hindu University, Varanasi.

3. Mamata Devi. **Madhyakalin Bharat mein ayurveda ka mulyankan.** BHU. Dr N P Rai, Department of Kayachikitsa, Banaras Hindu University, Varanasi.

4. Tripathi, Jyoti Shanker **Further studies on ayurvedic management of residual schizophrenia.** BHU. Prof R H Singh, Department of Kayachikitsa, Banaras Hindu University, Varanasi.

5. Upadhyay, Akasha. **Study of insecticide resistance.** BHU. Prof S D Gaur, Department of Preventive and Social Medicine, Banaras Hindu University, Varanasi.

CALENDAR OF EVENTS

Proposed Dates of the Event	Title	Objective	Name of the Organising Department	Name of the Organising Secretary/ Officer to be contacted
December 26-28, 1993	XXIII Annual Convention of Indian Society for Technical Education (ISTE)	Theme . Continuing Education for Engineering Manpower	Karnataka Regional Engg. College, Surathkal	The Executive Secretary, Indian Society for Technical Education, IIT Campus, New Delhi - 110016
December 26-29, 1993	IASLIC Conference	Theme : Collection Development in the context of Economic Recession	Birla Institute of Technology, Mesra, Ranchi	Prof. U.N. Singh, Organising Secretary, C/o Birla Institute of Technology, Mesra-835215, Ranchi
January 3-21, 1994	Winter School on Logic Programming and Related Topics	To present advanced level developments in Logic Programming	Indian Statistical Institute, Calcutta	Mr. K. Sikdar Coordinator, Winter School on Logic Programming and Related Topics ISI, 203 B.T. Road, Calcutta 700 035
February 10-11, 1994	National Symposium on Advances in Veterinary Research	Theme : Animal Health and Production	Indian Association for the Advancement of Veterinary Research, Bareilly (U.P)	Dr. T.N. Jaiswal, Head, Division of Standardisation, Indian Veterinary Research Institute, Izatnagar-243 122

THESES OF THE MONTH

A list of doctoral theses accepted by Indian Universities

PHYSICAL SCIENCES

Mathematics

1. Aherkar, Shirish Motichand. On relativistics magneto-fluid schemes. Shivaji. Dr G G Asgekar, Department of Mathematics, Shivaji University, Kolhapur.

2. Apte, Nilima Sudhir. Some contribution to the selection of best normal and logistic populations. Shivaji. Dr M S Prasad, Prof and Head, Department of Statistics, Shivaji University, Kolhapur.

3. John, J K. A study of some aspects of integral transformations. Shivaji. Dr M S Choudhary, Department of Mathematics, Shivaji University, Kolhapur.

4. Khan, Subhan. Fixed point theorems. HS Gour. Dr P L Sharma, Prof (Retd), Gour Nagar, Sagar.

5. Sangar, Vandana Mahadeo. Study of contractive mappings in Hilbert spaces. Shivaji. Dr B B Waghmode, Department of Mathematics, Shivaji University, Kolhapur.

6. Shaik Ismail. Fuzzy Bornologies. Andhra.

Physics

1. Abraham, Sunila. Infrared and Raman spectral investigations of certain cyclohexaphosphates, telluric acid adducts and formates. Kerala. Dr G Aruldhas, Prof and Head (Retd), Department of Physics, University of Kerala, Thiruvananthapuram.

2. Augustine, Simon. Characterisation of high temperature super conducting compound by X-ray and other techniques. Kerala. Dr P S Mukherjee, Scientist, Regional Research Laboratory, Council of Scientific and Industrial Research, Thiruvananthapuram.

3. Bhandakkar, Vivek Dinkarrao. Investigation of ultrasonic wave propagation in some bio-liquids. Nagpur. Dr Vilas A Tabhane, Department of Physics, Institute of Science, Nagpur.

4. Kadam, Sambhaji Maruti. Electrical, magnetic and microstructural studies of Co-Mg ferrites. Shivaji. Dr B K Chougule, Department of Physics, Shivaji University, Kolhapur.

5. Kuruvilla, Annie. Optical and related studies of crystals: Ammonium hydrogen-d-tartrate single crystals. Baroda.

6. Nagaraju, P. Composite heat transfer problems in saturated porous media. Bangalore. Dr B C Chandrasekhara, Department of Physics, Bangalore University, Bangalore.

7. Patil, Suresh Hindurao. Microstructures and physical properties of copper-magnesium ferrites. Shivaji. Dr B K Chougule, Department of Physics, Shivaji University, Kolhapur.

8. Sasi, M N. Studies on equatorial middle atmospheric dynamics and thermal structure. Kerala. Dr B V Krishna Murthy, Asstt Director, Space Physical Laboratory, Vikram Sarabhai Space Centre, Thiruvananthapuram.

9. Sharma, Sanjay Kumar. Study of charged particle tracks in glass and plastic track detectors. Kurukshetra.

10. Sindhu, S. Mechanism of growth and physical properties of urinary crystals: Differences between *in vivo* and *in vitro* set up. Kerala. Dr Y M Fazil Marickar, Assoc Prof, Department of Surgery, Medical College Hospital, Thiruvananthapuram and Dr K V Kurian, Principal Scientific Officer, State Committee on Science Technology and Environment, Government of Kerala, Kerala.

11. Surendar, K. Studies on diffracted field and imaging characteristics of optical systems apodised with the lanczos filters. Osmania.

12. Wali, Appasaheb Annappa. On certain problems of non-linear optical phenomena in the propagation and absorption of laser beams in different media. Shivaji. Dr M K Soudagar, Department of Physics, Shivaji University, Kolhapur.

Chemistry

1. Agrawal, Preeti. Structural studies on zirconium, vanadium and uranium complexes with nitrogen containing ligands. HS Gour. Prof S P Banerjee, Head, Department of Chemistry, Dr Hari Singh Gour Vishwavidyalaya, Sagar.

2. Asholkar, Arti. Trace analysis of metals after separation of their metal chelates with naphthalene. Devi Ahilya. Dr Ashok Kumar, Department of Chemistry, Devi Ahilya Vishwavidyalaya, Indore.

3 Biswas, Sujata Sukriti. Studies in chromatography: GLC and TLC - FID. Shivaji. Dr N R Ayyangar, Head (Retd), Organic Chemistry Division, National Chemical Laboratory, Pune.

4. Desai, Kokila H. Studies on medicinal plants and synthetic drugs. Saurashtra. Dr A J Baxi, Department of Chemistry, Saurashtra University, Gujarat.

5. Dodke, Ratna. Study of mixed ligand complexes of some selected metal ions and some selected ligands. H S Gour. Dr Farid Khan, Department of Chemistry, Dr Hari Singh Gour Vishwavidyalaya, Sagar.

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